THE BUILDER

Incorporating ARCHITECTURE & THE BRITISH ARCHITECT

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PRINCIPAL CONTENTS

ILLUSTRATIONS

	PAGE
TWO LONDON CHURCHES. By A. Llewellyn Smith	720
BURY CATHEDRAL. "BURY" ST. EDMUNDS: Scheme of enlargement by S. E. Dykes Bower	722
HEAD OFFICES AT MILL HILL, MIDDLESEX for John Laing and Son, Ltd. By Adams, Holden & Pearson	723
RESTORATION OF THE COLLEGE OF ARMS, EC4. By Vincent Burr & Partners	728
ARCHITECTURE AT THE ROYAL ACADEMY SUMMER EXHIBITION	730

ARTICLES

CORRESPONDENCE	721
ST. PAUL'S PRECINCT: Report to Court of Common Council	726
BARBICAN SCHEME: Criticism by the Court of Common Council	727
ROTTERDAM STARTS AFRESH: Reconstruction after Bombing	732
INSTITUTION OF STRUCTURAL ENGINEERS: Election of Officers	734
GREEN BELTS AND OVERSPILL: Mr. Sandys' Statement	736
ARCHITECTURE AT NORWICH: Talk to Rotarians	737
OBITUARY	737
BUILDING MATERIALS: Holding Prices: the Next Step?	738
NEW INFORMATION CENTRE: Sheffield Experiment	738
IN PARLIAMENT	739
SCHOOL FURNITURE AND EQUIPMENT: Cost Limits	741
PLANT AND MATERIALS	742
TRADE NEWS	742
FLEXIBILITY THROUGH STANDARDISATION: Development of the Number Pattern. By E. D. Ehrenkrantz	743
NFBTE SUMMER MEETING	748
PRICES OF MATERIALS	749
RATES OF WAGES	752
OVERSEAS BUILDING	754
SCOTTISH BUILDER	755
FUTURE CONSTRUCTION	756

NEWS SUMMARY

THE HOLFORD PLAN FOR ST. PAUL'S PRECINCT has received the "unhesitating approval" of the City's Improvements and Town Planning Committee. p. 726

THE BARBICAN residential development scheme is criticised by the Court of Common Council. p. 727

THE MINISTER OF HOUSING has defined the obligations of county councils in regard to the establishment of green belts. p. 736

THE RICS has set up a Committee to investigate the matter of preparing Cost Data. p. 738

A TECHNICAL INFORMATION CENTRE has been opened at Sheffield. p. 738

THE MINISTRY OF EDUCATION have prescribed maximum prices for school furniture and equipment. p. 741

THE OPERATIVES' NEW WAGE CLAIM has been characterised by the Employers' President as "irresponsible and unreasonable." p. 753

CO-ORDINATING DIMENSIONS

THE number of unrelated sizes for building products is large and is rapidly getting larger. No one who thinks seriously about the implications of this can have any doubt of the desirability of introducing some sort of order and pattern as soon as it is practicable; but the question is: what sort of order?

We have often been told of the American idea, thrown up before the war, for all nominal dimensions to be multiples of a selected small dimension. They called this a "module," and to the idea as a whole they gave the term modular co-ordination. They have attempted to introduce it using a 4-in. dimension as the basic unit, but it would seem they have not really got very far.; 4-in. grids are used by some American architects. They have an 8-in. brick available, and several of their traditional dimensions for housing, such as studs and stud spacing, have always had a 4-in. relationship. But comprehensive modular co-ordination has not yet been brought about in the USA, and in Europe, though the American view has been accepted in some quarters it has been criticised in others, either on the grounds that by accepting all multiples of a module you make little progress towards co-ordination, or because of a lack of conviction that 4-in. was the right dimension to start with.

Now these issues are coming squarely before us in Britain. We print elsewhere in this issue a paper by Mr. Ehrenkrantz, an American working at the Building Research Station, who makes proposals for a way of selecting nominal dimensions which automatically ensures a large measure of co-ordination regardless of module. The ideas are well argued, seem sensible, and were well received at a recent meeting of the Modular Society, where the paper was read. The BRS Number Pattern, as it is called, obviously has the backing of the Building Research Station and the British Standards Institution, both of whom are doing modular research. Perhaps we can take it as accepted for the time being.

The size of module is another matter, and judging from the discussion at the meeting, there is not so much unanimity about it. At the Modular Society, which has adopted the 4-in. module *pro tem.* it was natural that there should be advocates of this dimension, but cautionary voices were raised about the position of the brick industry, and on the face of it, surely it is right to do so. If we are to have modular co-ordination, we must have it for the whole industry and the brick is the main element in by far the larger part of British building. We cannot side-step it; and it is not a 4-in. unit, nor can it lightly or easily be changed. As someone at the meeting said, it is probably best thought of as based on a 3-in. module. But then why not consider this instead of 4-in. for a national module? Has it any disadvantages for us? No doubt, one answer will be that 4-in. is close to 10 cm., which apparently is a popular module on the Continent, and it might, therefore, help international trade. But how much good will this really do us? 4-in. is larger than 10-cm., and it might be far harder for others to use our products than for us to use theirs.

But then again, need one argue as between 3-in. and 4-in. or any other particular basis? It seems, from Mr. Ehrenkrantz's paper, that one can automatically get a range of co-ordinated dimensions from his number pattern without using a module. No doubt it seems heresy to suggest that we simply use these and forget about a module, but it might be a worth-while idea to consider.

Notes of the Week

Housing Centre Policy

THE Housing Centre is to hold a round table conference on July 10, following its annual general meeting. The aim is to formulate the Centre's programme for next year. This conference should be interesting and useful, for the Housing Centre, which unites most of the sides engaged in the provision of houses whether by local authorities or by housing societies, exercises much influence on national housing policy. Questions for discussion include the amendment of the Rent Acts, subsidy policy, differential rents, how improvement grants may be made more attractive to landlords, housing standards, and communal facilities on new estates, new towns and redevelopment areas. The general meeting is at 3.30 p.m., and the conference at 4.30 p.m. Miss M. C. Solomon, MBE, secretary, can supply further details from 13, Suffolk-street, SW1.

" Architectural Prospect " 2

THIS is the second issue in the new form and number 104 of the quarterly journals published by the Royal Incorporation of Architects in Scotland. It provides a varied editorial content of genuine architectural interest. Although basically of Scottish origin, the publication is not over-burdened with the nationalism one sometimes gets from the Scots and there should be, at 2s. 6d., quite a demand from architects and designers all over the country.

The editorial discusses a subject which, if at first sight it appears suspect, is of prime interest to all professional people: the question of public relations. It is pointed out that public relations are not just polite words for propaganda. In fact, the present title and format of this journal is the result of a Council directive that it should be given more direct visual appeal with the ultimate aim of attracting the general reading public. This it will surely do.

Features include a description of the new Edinburgh Airport Terminal at Turnhouse (architect, Robert H. Matthew); a pen portrait of Alexander Cullen, president RIAS; " About Tapestry," which is illustrated partly in colour; and a detailed view of the Design Centre, London. The editorial board consists of Andrew Hannah, Archibald M. Doak, Michael Laird, W. Sinclair Gauldie, and Ian R. J. Woods. The book was designed by Gordon F. Huntly.

Foreign Students' Course

FIFTEEN STUDENTS from abroad who are engaged in full-time courses of study in the London area took part in a week-end course arranged in Bath from June 8 to 10 by the British Council. The course was designed, by means of lectures and visits, to introduce them to English rural architecture and to explain its social significance. It was one of a series of week-end courses organised by the Council to enable students to see the many places of literary, historic or industrial interest which are within reach of London, and to meet the people who live and work in them. The students, who pay their own expenses, come from Brazil, Canada, Ceylon, France, Germany, Greece, India, Iraq, Jordan, South Africa, Thailand and the USA.

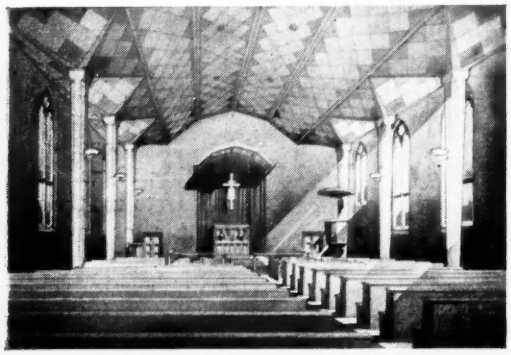
RC Association's Luncheon

THE Reinforced Concrete Association's annual luncheon, which was held at the Dorchester Hotel, W1, on June 6, was a pleasantly informal occasion at which the speeches were kept commendably short. Mr. H. Price, MP, was the chief guest, but he kept his remarks to a few " cracks " about concrete—none of which could, he was informed, be good—and other lighthearted matters. The retiring president, Mr. D. H. New, spoke of the necessity for increasing the numbers of those partaking in further education at lower supervisory grade level, and urged members to be " openly militant " about it in order to get something done. Mr. Frederick Snow, the president-elect, said it would be his endeavour, during his term of office, to make the work of the Association more widely known, and he went on to speak of the saving in coal that could be effected by using a ton of reinforcing rods compared with a ton of structural steel.

TWO LONDON CHURCHES

A. LLEWELLYN SMITH, MBE, MA, FRIBA
(Llewellyn Smith & Waters), Architect for Rebuilding

SHOWN here are designs for the rebuilding of two London churches. St. Stephen's, Canonbury, N1, dating from 1837, was without arcades. It had galleries on three sides, and at the east end a very small sanctuary flanked by two large porches. Only the four walls and a bizarre " Gothick " spire remain. In the reconstruction the altar will be transferred to the west end, and the roof of steel trusses will carry a gaily coloured " vault " of wall board. St. Mary's, Newington, SE17, built in the eighties in Kentish rag to the design of Fowler, of Louth, was burnt out in the War The fine tower will be retained, as also the lower part of the façade, as an enclosure for a forecourt to a new brick church. The drawings are by F. A. Evans.



St. Stephen's Church, Canonbury.

St. Mary's Church, Newington.

CORRESPONDENCE

Architectural Economics

To the Editor of *The Builder*

SIR,—I read the article "Architectural Economics" in your last issue with interest. While the idea of using the quantity surveyor as costs adviser is not new, surely in the interests of "quantity surveyors' economics" they should be reimbursed for their extra trouble. Quantity surveyors already do a lot of work not recognised in their scale of fees, e.g., specification writing, site surveys, etc.

It has been suggested that "elemental" instead of traditional "trade-by-trade" bills of quantities be used. No one seems to have foreseen that these will be awkward and therefore more costly to price.

The architectural profession talk much about making economies in the cost of building and about what should be done and who should do it; may I suggest that they should put their own house in order first and, having elucidated their clients' final requirements, produce well-planned and detailed schemes to enable the quantity surveyors to produce accurate bills of quantities? A quantity surveyor is neither paid nor trained to design, although force of circumstances very often leaves him with little alternative. All too often bills of quantities are prepared from inadequate and inaccurate information, and then only serve as "schedules of rates," the clients paying the additional fees for re-measuring.

Furthermore, if contractors were presented with complete sets of detailed drawings and accurate specifications at the commencement of building projects, they would be able to plan their operations well in advance. This would minimise delays and lead to savings in erection costs which, by our present system of competitive tendering, would be passed on to the public.

"GU-ESTIMATOR."

Estimating in the USA

To the Editor of *The Builder*

SIR,—Mr. C. A. Wales described in his paper on "Estimating in the USA" (*The Builder*, April 27) a system which in my opinion is superior to that employed in this country.

Mr. Wales asserts that everybody who matters in the American building trade is anxious to adopt the English system of quantity surveying but the industry seems unwilling to submit to the 2½ per cent. impost.

This reminded me of a letter from Mr. T. N. Rose in your April 20 issue on professional fees regarding the percentages which our own trade carries with apparent unconcern. He pointed out that fees are charged on the gross cost of a building project, no account being taken of specialists or of the type of work which might well reduce the work by half.

He also pointed out that the work involved in a £10,000 alteration job may be more than on a £200,000 new project which would carry a fee fifteen times greater than the alteration.

It is to be hoped that inconsistencies like these were duly pointed out by Mr. Wales to his American friends.

"CONTRACTOR."

Renfrewshire.

The Cleaning of Buildings : A Plea for Caution

To the Editor of *The Builder*

SIR,—The fear that historic buildings in our cities are being exposed to the risk of rapid decay by a fashion for cleanliness now much in favour among architects and restorers is the motive for this letter.

We are assured by the experts that washing-down with warm water not only does no harm to the stone-work, but that the result is highly beneficial, as it removes the incrustations of soot, which, they say, are terribly destructive of stone surfaces and carving.

Now, the proof of the pudding is in the eating, and from my own observations, I find that those City Churches which have been so cleaned*, far from showing decayed surfaces beneath the soot, now reveal beautifully sharp details, as on the famous north front of St. Mary Woolnoth. Note also that the Grinling Gibbons carvings beneath the aisle windows of St. Paul's Cathedral and the enrichments above them, though black with soot, are still sharp and in perfect condition.

Whether the visual effect is improved or not by washing remains, I suppose, a matter of opinion, and variable with the building in question. The north front of St. Mary Woolnoth as cleaned is certainly beautiful in its resemblance to old ivory; but I cannot believe that the present highly picturesque appearance of St. Paul's, which has acquired its own chiaroscuro through two and a half centuries, would be improved by washing. In any case, washing costs good money, and the building will doubtless soon get dirty again, in spite of the City being now a "smokeless zone."†

But this is not all, for these freshly cleaned surfaces are now exposed to all the carbon-monoxide and other fumes from the ever-increasing traffic, that were unknown when the churches were built and from which the soot evidently formed an effective protection. What will carvings thus exposed look like in even ten years' time? A parallel to their probable state is provided by the present mouldering condition of the richly carved Bassingham doorway at Norwich (built into the Old Guildhall), which has rapidly deteriorated in recent years—compare the picture of it in Stephen's "100 Pictures of Norwich," 1926, with that in Kent and Stephenson's "Norwich Inheritance" (not dated, but fairly recent), the caption to which states that, at some time, it has been cleaned! Fine, unprotected Norman doorways at York are also rapidly decaying.

Let us leave well alone, and not for the sake of a short-lived smartness risk the loss of original surfaces and carving that the vandalism of the "restorer" and the two world wars have so far spared.

GERALD COBB.

College of Arms, EC4.

*St. Edmund, Lombard Street, St. Mary Woolnoth, St. Mary Somerset (Tower), St. Margaret Pattens (Tower) and the Churchyard Gateway at St. Olave Hant Street.

†For the picturesque weathering of Portland stone in London, see article by James Bone in *Country Life*, December 29, 1923.

"—feathered serpent and all—it's definitely Aztec in feeling!"

Heavy-duty Flooring Timbers

To the Editor of *The Builder*

SIR,—We are rather surprised and perturbed to note some of the statements mentioned in the article "Some Useful Timbers for Heavy-duty Flooring," by Mr. C. N. York, in your issue of June 1.

In connection with the fourth paragraph, we would point out that supplies of Canadian maple are plentiful, and this timber is readily available from large stocks held in this country. Prices are extremely low, and in strip form it is one of the cheapest of the best quality hardwoods on the market.

We would add that, in view of the title of this article, the mention of white serava would appear to be rather misleading, and certainly this timber could not be satisfactorily utilised as a heavy-duty floor. Further, although it is appreciated that the subject is most extensive and could quite easily be carried on for many pages, we are surprised that such timbers as missanda, panga panga, muhuhu and East African olive, which are in general use throughout the trade, are not mentioned.

L. J. PHILIP, Director,
The Philip Flooring Co., Ltd.
66/8, Hertford-road, N1

BURY CATHEDRAL, BURY ST. EDMUNDS

Scheme of Enlargement

S. E. DYKES BOWER, FRIBA, FSA, Architect

PLANS have been prepared by Mr. S. E. Dykes Bower, FRIBA, FSA, for the enlargement of Bury Cathedral, formerly a parish church, to make it "worthy of the County of Suffolk." The church, which was built in the early years of the sixteenth century from the designs of John Wastell, consists of a large nave of nine bays, with wide aisles and an aisleless chancel added in 1865-9 by Sir Gilbert Scott, who also replaced the original flat-pitched panelled ceiling with the existing hammer beam roof, which is to be retained.

Briefly, it is proposed to keep the fine nave, to enlarge the choir—adding a lantern tower—and to provide vestries, library, offices and other accommodation. On the north side a cloister would be erected, giving access to the offices without going through the Cathedral. Scott's chancel and vestries would be taken down, but the stonework of their windows and gable crosses would be set aside for reuse, as would the flints of the exterior walling.

The new and enlarged choir would be of five bays with a south aisle of four bays. The new buildings to the north would provide, on the ground floor, a sacristy, and vestries for the bishops, provost and clergy; at first-floor level there would be a new Lady Chapel, a Chapter House, and vestries for the choir.

The new tower has been designed as a lantern tower that obviously would not be carrying bells, in order not to overwhelm the Norman tower—one of the former gateways to the monastery—which, though detached, is part of the Cathedral and contains the bells. The pyramidal roof and flèche of copper is intended to give the new tower elevation and bring the Cathedral into view from Angel Hill and other parts of the borough.

The scheme also contains proposals for beautifying the immediate surroundings of the Cathedral. It is suggested that the present churchyard should be cleared and replaced with a lawn surrounded by a broad paved walk. In that way the ancient Norman tower would rightly become an outstanding feature.

This work would have to be the responsibility of the local authority.

Although the scheme is comparatively modest, the cost of work is estimated at about £275,000. Plans are being prepared to launch an appeal later in the year for funds. The first target would be for about £75,000. About £12,000 has been raised so far.

A complete description of the proposed work, written by Mr. Dykes Bower, together with reproductions of plans, sections, elevations and perspective drawings is given in a well-produced booklet issued by the Cathedral authorities. The scheme has been endorsed by the Cathedral Chapter and Council and by the Central Council for the Care of Churches.

Above: Interior view showing enlargement; original nave and 19th-century hammer-beam roof are retained. Beyond new strainer arch, light falls from new lantern tower. Wrought-iron grilles lead to enlarged choir. Left: View showing enlarged Cathedral with proposed lantern tower and rebuilt choir. Bell tower dates from about AD 1130.

General view of the street elevation. Below : Main entrance.

HEAD OFFICES AT MILL HILL, MIDDLESEX,

for John Laing & Son, Ltd.

Architects
ADAMS, HOLDEN & PEARSON, FF. AA.RIBA

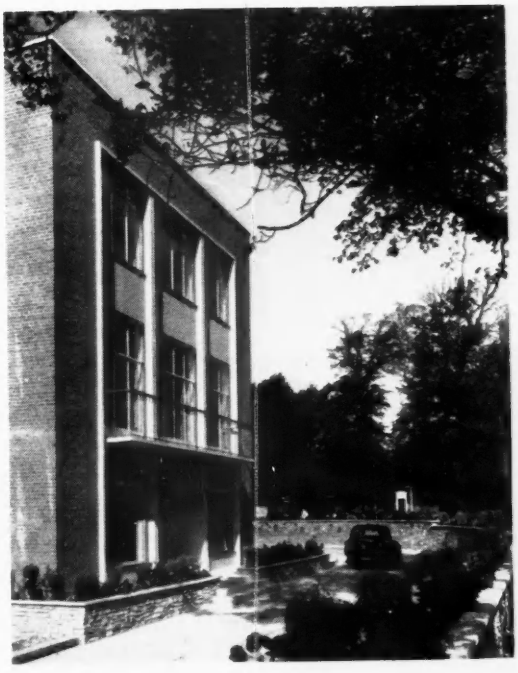
Partner-in-charge
CHARLES TARLING, ARIBA

Assistant Architect
JOHN DAY, ARIBA

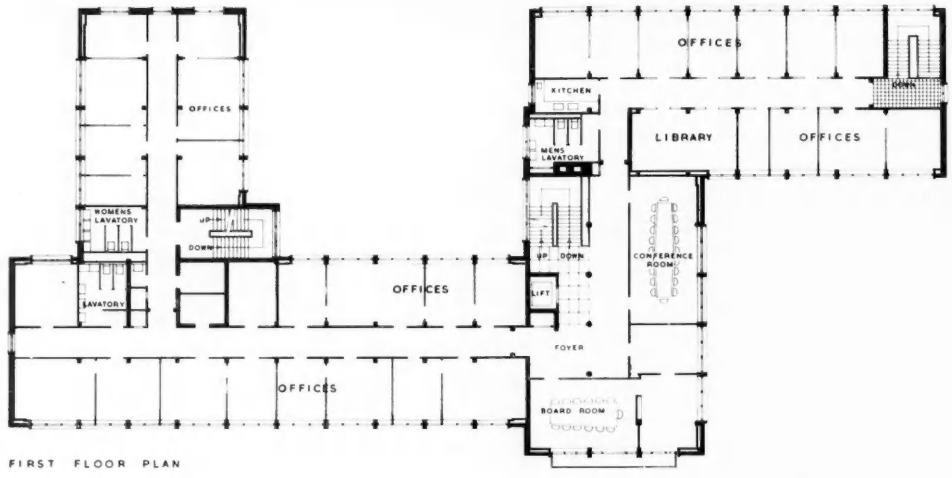
Structural Engineer
D. N. MITCHELL, AMICE, MIStructE

Builders
JOHN LAING & SON, LTD.

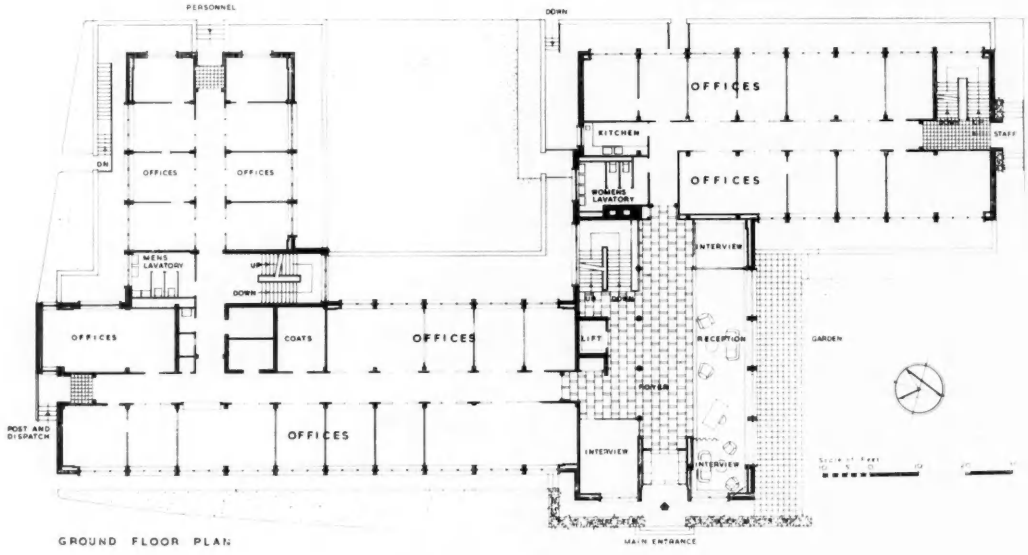
Site Agent
I. O. MACKAY



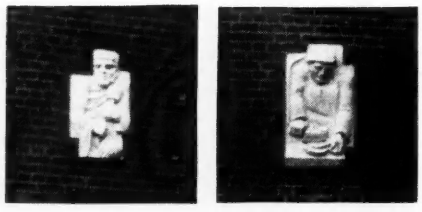
THE main factors governing the design of these new offices, situated on a prominent corner site at Mill Hill, were to provide maximum natural daylighting and a layout giving a high degree of flexibility in the sub-division of office areas. On the first floor, in addition to the board room, conference room and directors' offices, offices have been provided for the management staff of the Operations Division, and on the second floor there are spacious offices for the engineers' department. The Frenger acoustic ceiling with its flat soffit throughout the offices has been used, and this, together with lightweight demountable



FIRST FLOOR PLAN



GROUND FLOOR PLAN



These sculptured panels, cast in artificial stone and depicting the medieval and modern mason, were modelled by Mrs. Liselotte Tarling, and are a feature of the main elevation.

partitions glazed above the height of 4 ft. 3 in., allows alterations within the office areas as required.

The structural framework, floors and roof are in reinforced concrete and the foundation is a reinforced concrete raft which forms the floor of the basement. The cavity walls have an inner leaf of Thermalite, and are faced with brown hand-made, sand-faced bricks and artificial stone. The windows are set in African mahogany frames and dressings to the windows are in Empire stone with panels below in precast concrete with a light textured finish.

At the main entrance there are two pairs of armour plate glass doors which bear the etched monogram of the company's initials. These lead into a foyer comprising reception area and interviewing rooms. The floors of the reception areas are in cork tiling and the floor area adjoining the main staircase, lift and entrance lobby is paved with two types of marble, Bianco del Mare and Trani, laid to form a pattern with a Belgian black marble edging. The walls are faced in Travertine, the window columns are cased in dove grey and

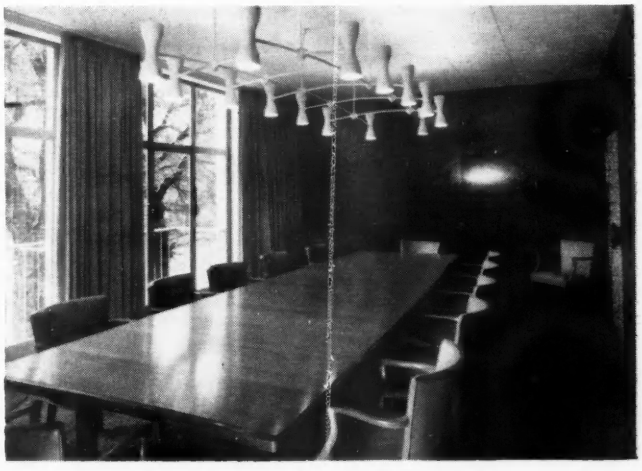
Trani marbles, and the cills are in dove grey. The main staircase has Bianco del Mare treads and Trani risers with the strings in terrazzo.

Heating and hot water supply is provided by two oil-fired welded boilers and one small oil-fired domestic boiler connected to calorifiers. Frenger ceilings in units clipped to a pipe grid distribute radiant heat throughout the building. The building is divided into two zones for heating purposes according to aspect and exposure, each zone being separately controlled by thermostats, and there is an extract system of ventilation.

To allow for changes in the floor areas required by the various departments, lighting points, power points, telephone outlets and the public address system have been installed on a grid basis. The basic width of one office bay is 10 ft. 6 in., and a standard layout of services has been planned for this unit and used throughout the office areas, supplemented as required in certain rooms. Each service is carried to the various floor levels by vertical ducts, planned at the junction of wings. Horizontal service runs are carried above the Frenger ceilings in the corridors. The building was occupied within 11 months of the start of construction.

Sub-contractors and suppliers were as follows:

Plastering, Pollock Bros. (London), Ltd.; electrical installation, Holliday Hall and Stinson, Ltd.; cork floor tiling, Semtex, Ltd.; thermoplastic floor tiling, The Marley Tile Co., Ltd.; painting, Gee Brown, Ltd.; demountable partitions, Anderson Construction Co., Ltd.; iron railings and gates and metal balustrading, Light Steel Work (1925), Ltd.; Korkoid flooring, Korkoid Decorative Floors; wall and floor tiling, S. A. Forbes and Son; asphalt, The Excel Asphalte Co., Ltd.; artificial stone, Empire Stone Co., Ltd.; plumbing and glazing, J. H. Shouksmith and Sons, Ltd.; gas carcassing, North Thames Gas Board; steel windows, The Crittall Manufacturing Co., Ltd.; lightning conductor, J. W. Gray and Son, Ltd.; passenger lift, Waygood-Otis, Ltd.; heating, hot water and ventilating, G. N. Haden and Sons, Ltd.; furniture, Heal's Contracts, Ltd.; garden walling and garden work, F. C. Courten and Co., Ltd.; steel shelving, Acrow (Engineers), Ltd.; venetian blinds, The Crittall Manufacturing Co., Ltd.; terrazzo, Diespeker and Co., Ltd.; terrazzo Art Pavements and Decorations, Ltd.; marble and terrazzo, J. Whitehead and Sons, Ltd.; internal telephone installation, Standard Telephones; paint and distemper, British Paints, Ltd.; paint, ICI, Ltd.; ironmongery, Adrian Stokes, Ltd.; cinema screen and blackboard, Wilson and Garden, Ltd.; Thermalite blocks, Thermalite, Ltd.; mahogany panelling to board room, Wm. Mallinson and Sons, Ltd.; facing bricks, R. Y. Ames, Ltd.; sanitary fittings, Shanks and Co., Ltd.; armour plate entrance doors, Pilkington Bros., Ltd.



Top: Foyer and main staircase. Middle: Board room. Bottom: A Director's office.

HEAD OFFICES AT MILL HILL, MIDDLESEX

ST. PAUL'S PRECINCT

Report to Court of Common Council

THE Court of Common Council of the City of London had before them at their meeting yesterday (June 14) a report of the Improvements and Town Planning Committee "unhesitatingly recommending" the acceptance in principle of Sir William Holford's proposals for the planning and architectural treatment of the area around St. Paul's Cathedral. Following is the text of the committee's report:

In view of the national importance of, and the great public interest in, the Holford report, we have given immediate consideration to its broad implications, since we apprehend that your Honourable Court would wish to be advised of our preliminary views at a very early date.

For reasons, however, to which we will presently refer, we do not feel that it is necessary, or indeed practicable, at this stage, for us to deal in detail with the numerous and important questions which must inevitably arise at various stages of the implementation of the Holford report.

We feel that Sir William Holford has produced a scheme which will in principle provide for the ultimate creation of a worthy setting for the cathedral, and for the immediate consideration of such amendments to the County of London Development Plan as may be necessary as the first stage in the implementation of the scheme in principle.

In his conclusions and summaries Sir William Holford has himself reminded the corporation that

> "in presenting his design in model form, there being no client, no programme and no specific instructions to the architect, he has remembered all along that the outline suggested in the report would have to be interpreted by other designers and that particular buildings should not be looked upon as architectural designs in the full sense.
>
> "There is, however, a complete design behind the scheme as a whole which can be recognised in the form of the related open spaces between the buildings and around the Cathedral rather than in the form of the individual structures. These spaces make the setting for St. Paul's and the scheme will stand or fall according to whether they are effective or otherwise.
>
> "If they are accepted in the main as the basis of development then the next stage is to proceed in the detailed design of buildings."

Initial Views

The fulfilment of the Holford Scheme is a matter which must necessarily involve the continuous attention of the Corporation, of other interested bodies, and of developers and their architects for many years to come, and we think it would be unrealistic, at this stage to do more than to indicate our initial views on the matter. We are reinforced in that conclusion by the realisation that before any steps at all can be taken to secure the implementation of the proposals in the report, the necessary statutory machinery must be set in force to secure a modification of the County of London Development Plan, as approved by the Minister in March, 1955. In this connection we would remind your Honourable Court that the present Minister of Housing and Local Government in approving (with modifications) the County of London Plan, expressed himself as follows:

> "There is one area to which I have given very special attention and that is the area in the City around St. Paul's. On examining the detailed plans and models of the proposed scheme I could not help feeling that a unique opportunity was being missed to provide a truly worthy setting for Wren's world-famous cathedral.
>
> "I am now in course of discussing this matter with representatives of the London County Council and of the Corporation. Meanwhile, I have had the plan modified in such a way as not to preclude any changes in the treatment of this area which may be decided upon."

The procedure involved in the modification of the Development Plan, which, as we have indicated, is an essential prerequisite to effect being given to the proposals of Sir William Holford—or indeed any other major alteration to the present environs of the Cathedral — must necessarily take time, since any proposed modifications will have to be submitted by the London County Council, as planning authority, to the Minister of Housing and Local Government, and are unlikely to become effective without the holding of a public inquiry, prior to the Minister's decision being given. The ultimate decision rests with the Minister of Housing and Local Government.

Unhesitating Approval

With these facts in mind, we have given consideration to the best method of ensuring that, at the earliest possible date, the necessary steps should be taken, without which further consideration of Sir William Holford's proposals remains a mere academic study.

Whilst we cannot at this stage indicate the precise nature of the modifications to the development plan which will be necessary, it is clearly essential that we should remove any doubts which may exist as to the measure of acceptance which we think should be extended to the proposals in the report. We have no hesitation, therefore, in advising your Honourable Court that, subject to further consideration of the financial implications, it is our considered opinion that the proposals contained in the report of Sir William Holford should be approved in general principle as a satisfactory basis for the ultimate creation of a worthy setting for the cathedral, insofar as may be necessary at this stage for the purposes of amending the development plan, that is to say, for the purpose of considering the areas of comprehensive development, open spaces, roads and zoning, and such other limited matters as appear in such a document.

We have formed this conclusion notwithstanding the realisation that its acceptance by your Honourable Court ultimately gives rise to considerable financial obligations. Nevertheless, we would point out that insofar as the Corporation now decides to ask the London County Council as planning authority, to make the necessary arrangements to secure the appropriate modifications of the development plan, we are doing no more than taking the first step in the implementation of a decision to adopt the report in principle. Acceptance of the report in principle does not, of itself, commit the authorities to any particular item of expenditure, either in the acquisition of land, or in the construction of roads and open spaces, the extent to which, and the period of time over which these matters are carried to a stage where the authorities are committed to their execution, must form the subject of further study, and a series of specific decisions.

We feel that to adopt any other course would be impracticable and would involve a delay in the submission of this report, which would not be in the public interest.

Some Reservations

Equally, the acceptance by your Honourable Court of our recommendation to approve the report of Sir William Holford in general principle, must not be regarded as necessarily implying that the Corporation accepts unreservedly many of the detailed proposals contained in the report; all of which must, of course, be examined in detail from time to time, both from the planning and aesthetic aspects. At this stage, for instance, we are expressing no opinion about the merits of the proposals to reinstate Temple Bar to the north of the Cathedral; in like manner, the acceptance by your Honourable Court of our recommendation does not determine irrevocably the height of the tall block of office buildings to the north of the Cathedral, or the precise future of St. Paul's Garden. These and many other matters of detail cannot, we suggest, be fairly assessed, until further opportunities have arisen for securing, not only public reactions but the observations of the Royal Fine Art Commission and the Dean and Chapter. We are in communication with both these bodies, in order that we shall be in a position to advise your Honourable Court from time to time of their views, and of our considered conclusions on the several matters arising for determination.

Nevertheless, we recognise that your Honourable Court would wish to have some information as to the probable cost to public funds of the carrying into execution of the proposals of Sir William Holford, broadly on the basis propounded in the report. We estimate that the cost to public funds likely to arise if such a course is ultimately pursued, will be of the order of £10m. to £12m.; though we would point out that in any event this expenditure would be spread over a period of years and the loan charges upon

the capital outlay will be offset by rents and government grants. We have expressed the expenditure as being a charge on "public funds," as we are, at this stage unable to indicate in what manner this expenditure would be shared between rate funds and the exchequer.

Our estimate is arrived at on the basis that all the land comprised within the precinct is acquired and subsequently developed by the Corporation as a series of redevelopment units. We understand that the Church Commissioners, who own considerable portions of the area between the Cathedral and Newgate-street, might be prepared to undertake development in this area, in accordance with the proposals in Sir William Holford's report. We are in consultation with the Church Commissioners on this matter at the present time, and we mention the point merely to indicate that, if satisfactory arrangements can as we hope be made with the freeholders, the expenditure falling on public funds might be considerably reduced, since the necessity for the Corporation to purchase so much land in the precincts of the Cathedral would be correspondingly reduced.

We trust that your Honourable Court will feel satisfied that we have dealt with this matter with the urgency which its public importance demands; and that with the same object in mind, the Court will now authorise your committee to take the necessary steps in consultation with the London County Council to secure the appropriate modifications of the development plan. The exact nature of these modifications will be brought before your Honourable Court again when they have been precisely formulated—an operation which in itself, may well occupy a period of two or three months. At that stage, both your committee and your Honourable Court will be better able to adjudicate on the merits of any particular modifications which are proposed to be made; and in respect of which your Honourable Court will, of course, be free to take such decisions and to make such representations to the Minister as may be appropriate at that time.

In view of the wide measure of approval which Sir William Holford's proposals have commanded, in the ranks of both professional and lay opinion, we have no hesitation in recommending that the course of action which we suggest in this report, should be adopted by your Honourable Court.

Lowestoft Pier Pavilion

THE quantity surveyors for the South Pier Pavilion, Lowestoft (illustrated in our last issue) were Messrs. Ashford, Trower and Waller, of London House, Lowestoft, who have been associated with the South Pier, under direct appointment by the Lowestoft Borough Council, since its derequisition by the War Department. The firm prepared claims connected with its use by that Department and also war damage claims prior to rebuilding.

ST. MARY-LE-BOW RESTORATION

A drawing by Mr. A. C. Fare, RWA, of the Church of St. Mary-le-Bow, London, which was gutted by fire in 1941, *and is now undergoing restoration. The upper part of the steeple was severely cracked, necessitating rebuilding, in the course of which it is hoped to replace the upper columns of granite inserted by Gwilt in the* 19*th century with columns of Portland stone as in Wren's original design. The architect for restoration is Mr. Laurence King, FRIBA.*

BARBICAN SCHEME CRITICISED

Referred to Committees for Consideration

THE scheme for the residential redevelopment of part of the Barbican area in the City of London recently submitted by Messrs. Chamberlin, Powell and Bon, and described in *The Builder* of June 1, was subjected to considerable criticism by the Court of Common Council at their meeting on May 31.

The chairman of the special committee, MR. T. KINGSLEY COLLETT, in submitting the report and asking that it be referred to a number of committees for consideration, said that this was not the first scheme for the comprehensive redevelopment of the area. The scheme of the New Barbican Committee which the court had refused to adopt was now before the Minister of Housing and Local Government.

The fact that Messrs. Chamberlin, Powell and Bon had shown the City of London School, the City of London School for Girls, and the Guildhall School of Music in a new location did not imply that either the special committee or the Court were committed to the removal of those institutions from their present sites. Such matters would have to be considered by the schools committee, the music committee, and the finance committee before any precise recommendation could be submitted to the Court.

He moved that the report be referred to the special committee for consideration and report in conjunction with the improvements and town planning, public health, City of London Schools committees and the music committee.

CAPTAIN ALFRED INSTONE, while welcoming any scheme for the provision of residences, was critical of the method in which it had been brought forward. Without any authority from the Court, he said, reports had appeared in the Press, with pictures of the scheme. Even more undesirable was a list of critical observations made by their own officials. Nothing appeared to be left to members.

MR. H. S. SYRETT said that he was "staggered" at the report and at the intervention of the special committee. The job should be left to one committee. Complaining of the confusion, he said that the Court had heard of the Martin-Mealand scheme for commercial and office development, but had never seen it. Nor had they any information as to who was going to pay.

MR. C. R. WHITTINGTON also wanted to know more about finance and said that there appeared to be no financial unity. It might be that the Corporation would be left with that part which did not pay and the commercial developers with the part which did.

MR. KINGSLEY COLLETT said that the criticism of the officers related to the original report. He confessed that efforts had been made to get ahead, but undertook that nothing should be decided without the full knowledge and concurrence of the Court.

The scheme was then referred to the special committee and the other committees for consideration and report.

Restoration of the College of Arms, EC4

VINCENT BURR & PARTNERS, Architects
EDMUND G. HARKER, LRIBA, Partner-in-Charge
HARRY WEAIT, LTD., Builders

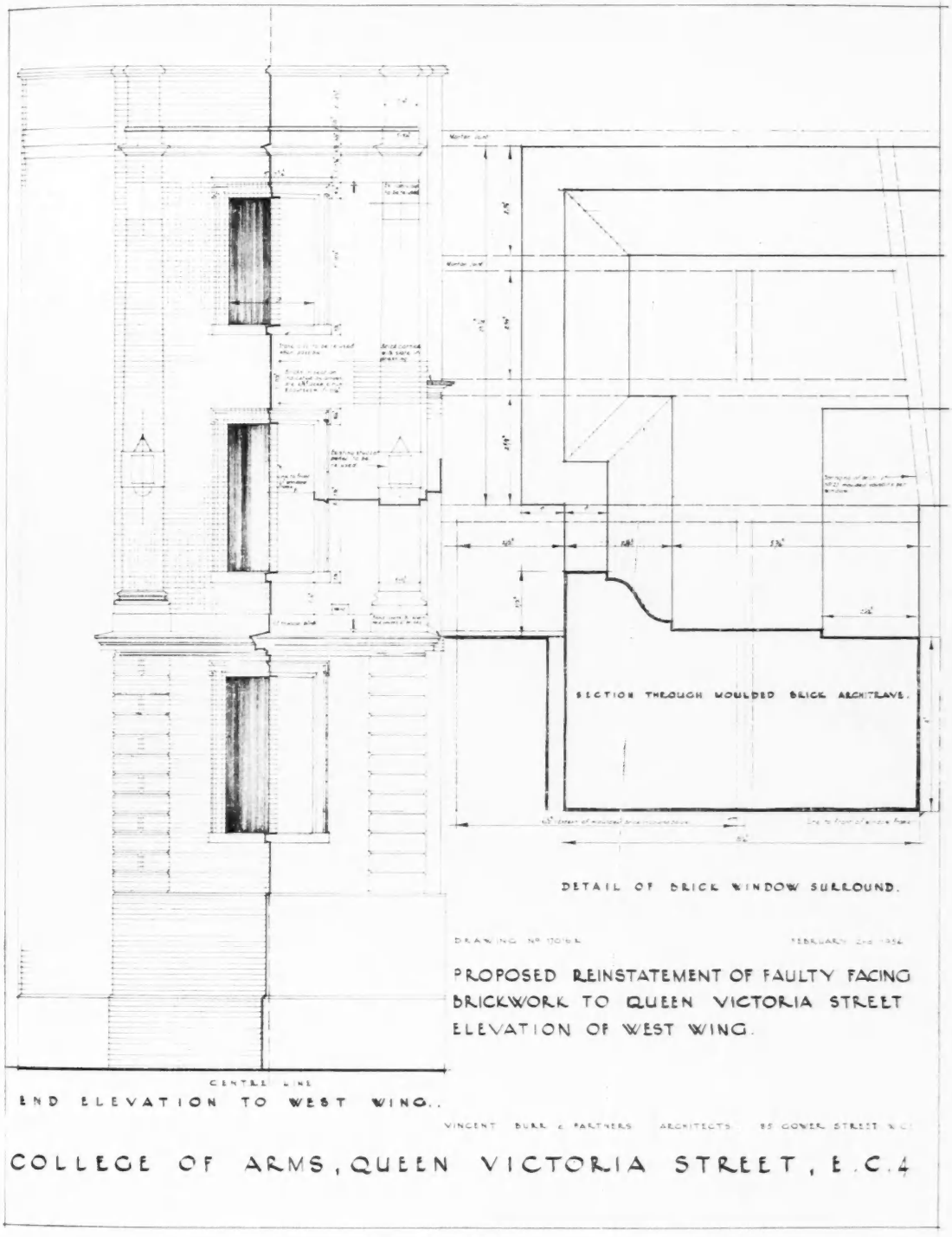
THE College of Arms, a building of historical interest, is on a site first assigned by Queen Mary Tudor in 1554. In the Great Fire of London the building was destroyed, and during the reconstruction the builder employed was Morris Emmot, the King's builder. About the year 1677 the reconstructed Heralds' College building was completed.

The College suffered only superficial damage by enemy action, but during the restriction of building operations in the war years many urgent and essential repairs to the fabric of the building could not be carried out. When the control of building licences was lifted the architects to the College were instructed by the Chapter of the College to carry out a thorough inspection of the building. In April, 1949, an extensive survey was made and a full report of the condition and stability of the structure was prepared.

The survey revealed many serious defects in the structure, particularly in the roof construction and in the external brick parapet walls—the latter were found to be crumbling away and in a dangerous condition, chiefly due to age. The dormer windows were found to require extensive repairs and renewals.

The existing red facing bricks to the East and West wing elevations were also much decayed and many fractures in the main brick walls had to be dealt with. The existing slated roofs were in a bad condition and not watertight, the slates having perished through age. Many problems and difficulties were met with during the course of the work, the most interesting being the replacement of the slating to the main roofs with new red hand-made tiles. Many old original hand-made tiles were discovered in the roof space during the survey and it was decided that the roof should be retiled as before. Although the roof timbers in the main were found to be sound, the bearings of the main beams proved to have rotted away. All the existing rafters, purlins, etc., have been reframed, as in many cases they were found to be loose and unfixed.

The work of restoration started in November, 1953, with the backing of the MoW, who made a grant towards the cost on the recommendation of the Historic Buildings Council for England. A restoration fund was opened to the public by the College authorities to obtain the balance required.

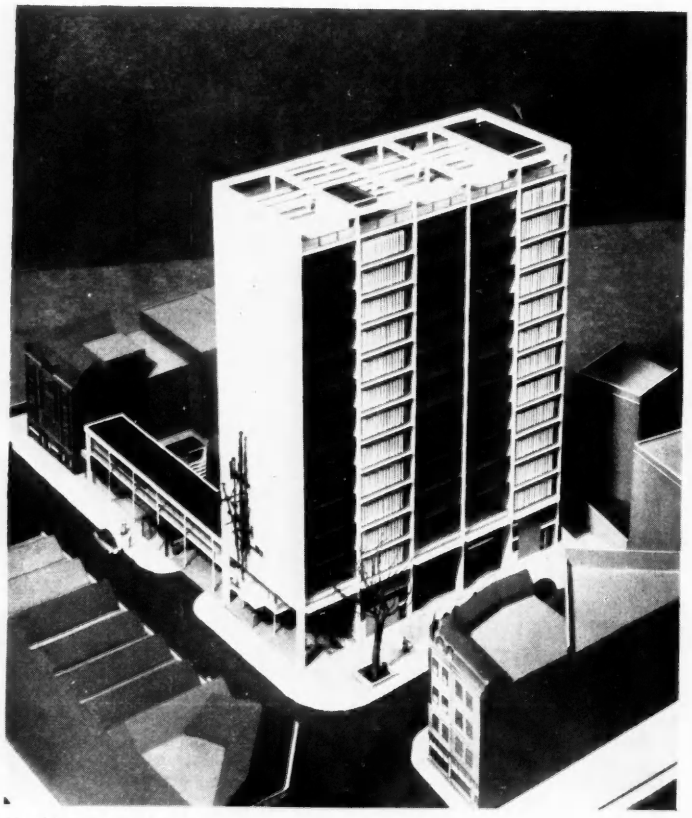

SECTION THROUGH MOULDED BRICK ARCHITRAVE.
DETAIL OF BRICK WINDOW SURROUND.
DRAWING No 1701/A FEBRUARY 2nd 1956
PROPOSED REINSTATEMENT OF FAULTY FACING BRICKWORK TO QUEEN VICTORIA STREET ELEVATION OF WEST WING.
CENTRE LINE
END ELEVATION TO WEST WING.
VINCENT BURR & PARTNERS ARCHITECTS 85 GOWER STREET W.C.1
COLLEGE OF ARMS, QUEEN VICTORIA STREET, E.C.4

A temporary enclosure to the quadrangle provided in 1948 has now been replaced with eighteenth-century wrought iron gates and railings which have been adapted to fit from Goodrich Court in Herefordshire, now demolished. They were presented to the College of Arms by Mr. Blevins Davis, an American, who also paid for the erection. They were restored by Messrs. Bert Crowther, Ltd. Roof tiling was by Thurman and Allard, Ltd., and the coping stones were supplied by Charles E. Ebbutt and Sons, Ltd.

The ceremony of the official opening of the gates was performed by Mr. Aldrich, the American Ambassador, in the presence of the Duke of Norfolk, the Earl Marshal, on Thursday, May 24, this year.

RESTORATION OF THE COLLEGE OF ARMS, EC4

Drawn by D. Jackson.



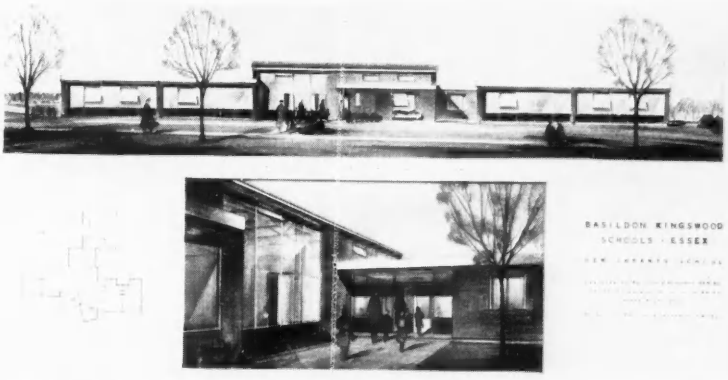
Model by Preview, Westerham.

CITY OF BIRMINGHAM : Shops at Kents Moat Estate.—A. G. Sheppard Fidler, FRIBA, City Architect.

OFFICE BLOCK, Upper St. Martin's Lane, WC2—model.—Basil Spence, ARA, architect.

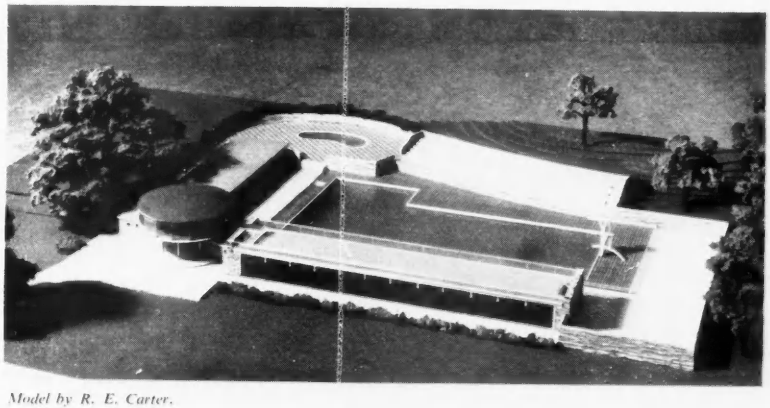
ARCHITECTURE AT THE RA SUMMER EXHIBITION, 1956

ARCHITECTURE AT THE RA SUMMER EXHIBITION, 1956



NEW INFANTS' SCHOOL, Basildon, Kingswood, Essex.—Philip G. Freeman, FRIBA, architect.

Drawn by Philip G. Freeman.



PROPOSED SWIMMING POOL, Crawley New Town.—Howes & Jackman, architects.

Model by R. E. Carter.

Drawn by E. J. Thring.

CHURCH IN HARLOW NEW TOWN CENTRE.—D. R. Humphrys and R. W. Hurst, architects.

ROTTERDAM STARTS AFRESH

Reconstruction After the German Bombs

By S. GORDON JOSEPH

IT took just 40 minutes, in the air raids of May 14, 1940, to wipe out the historic core of the city of Rotterdam which had been built up over the past six centuries. Founded in the Middle Ages on a site near the River Maas, which is virtually a branch of the Rhine, Rotterdam stands near the outlet into the North Sea of that great West European river.

It was inevitable, therefore, that the town should develop into a major port, for the Rhine has been one of the main arteries of Continental trade throughout history. When the Dutch became one of the world's leading mercantile nations during the 17th century, Rotterdam's port underwent a large expansion. Hand-in-hand with that growth, the population of the city rapidly increased; but whereas the port expansion took place in an outward direction, the town area remained more or less the same, hemmed in by its fortifications, and its development was thus largely internal. Well before the era of industrialisation in the 19th century, when most other towns really began to experience the worst effects of population pressure for the first time, the entire city of Rotterdam had become built up to the point of social suffocation, with one of the highest population density figures (about 400 to the acre) in Western Europe.

Town and Port

Not only that, but the town was also completely unplanned, streets narrow and their alignments haphazard; the two railway stations built in the 19th century were badly sited and connected; and during most of its existence the town—built on reclaimed land scarcely 10 ft. above sea-level—was frequently flooded at times of high tide in the river. The port meanwhile, suffering no such restrictions, developed downstream until, by the 20th century, it had attained an area greater than that of the town itself. But the maximum efficiency and full freedom even of the port were to some extent hindered by bridges across the river, which had been built when Rotterdam spread south of the Maas in more recent times, and by the beginning of this century the bridges themselves were becoming inadequate for modern traffic requirements.

Nevertheless, both city and port continued to prosper. A commission, appointed to look into some of the evils of urban congestion, found in favour of building outside the old town limits and such building, followed by a municipal programme of creating new low-rent suburbs, noticeably began to reduce population pressure in the town centre. A new broad avenue—Coolsingel—was constructed through the heart of the city with spaciously placed public buildings and offices sited alongside. In the port, too, development increased apace and just before the Second World War the volume of shipping in Rotterdam harbours had even surpassed that of London on occasion.

The Devastation of War

The municipality was thus well aware of its responsibilities in replanning Rotterdam and during the 1930s had initiated slum clearance schemes and the general tidying up of the city. It was realised that this would certainly involve a considerable amount of demolition. But the long-term programme envisaged to carry out these necessary changes as smoothly as possible was cut short by the savage blitzkrieg demolition of the Nazi dive-bombers in 1940. Fires spread throughout the city, following the briefest of raids, and 25,000 houses were burnt to the ground, besides 7,000 other buildings of all types, in 650 devastated acres in the heart of Rotterdam.

It might have been expected that this disaster, plus the occupation of the city by enemy troops, would have been enough to stun the authorities and citizens into complete inactivity. Yet within one month, on instructions from the municipality, the city architect had ready complete plans for the reconstruction of Rotterdam. What is more, the plan actually began to be put into operation while the town and nation were under Nazi occupation. The reason for such a prompt reaction was not only the urgent desire and necessity for making an inhabitable city out of a heap of ruins without delay; but also because the Dutch authorities feared that the Nazis would impose a plan of their own devising the moment they got down to reconstruction, which would undoubtedly be early on in their occupation of the city.

A New Town Plan

Remarkably enough, the Germans made no objection when they learned that a new town plan was in the making and, in fact, they approved its final form. It is an irony of the situation that Hitler was even keen to see the city on its feet again, since he envisaged Rotterdam as Europe's major port after his proposed obliteration of London. So the reconstruction, if not positively encouraged, was certainly not hindered at the beginning; and the debris was cleared, and new streets, canals, bridges and houses erected.

The Rotterdammers, however, did not share any grandiose ideas with the enemy regarding the future of their port. They planned it on what they considered would be its likely normal post-war scale of development, and in relation to the foreseeable size of the city. It soon began to be apparent that the original plan would not be sufficient for the needs of their new and modern town. So constant alterations were suggested, and the plan was substantially modified. From then on, the municipality adopted the policy of constant revision of the basic plan wherever it should prove necessary.

If such an attitude strikes us as the negation of planning, we should remember the considerable difficulties facing the authorities of Rotterdam at the time. In the first place, the Nazi occupation was almost exclusively interested in reconstruction with the minimum of delay, rather than in an overall plan, including consideration of the undamaged sections of the city and their relation to the new town centre. The Dutch authorities soon realised that a plan based on reconstruction alone was going to prove insufficient for the future of the city, so all their

The Rotterdam Bank building, in the Coolsingel area. It was completed in 1948.

A view of the Lijnbaan, a modern arcaded shopping street for pedestrians only.

negotiations with various citizens and local urban interests had thenceforth to be conducted in secrecy.

They were also faced with the imponderable aspects of Rotterdam's fate. How would the city finally come out of the war? Should they allow their optimism to influence the scale of their plan; or would they subsequently find—after much costly construction had taken place—that they had allowed for too great a development? In these war years, every inch and ounce of material had to be put to the best use; there was no room for error leading to waste. The basic plan, therefore, had to be flexible, allowing for the incorporation of needs which could not possibly be foreseen in these abnormal times, as they arose.

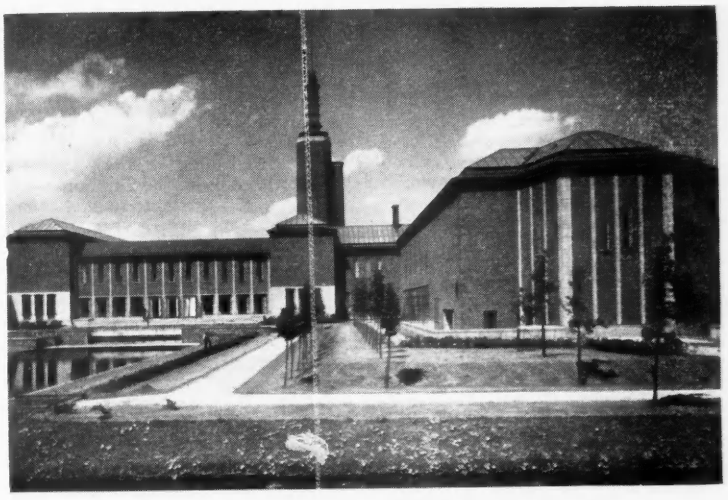
First, then, an optimum population was calculated at a figure of about 750,000 (the figure stood at just over 600,000 in 1938.) To reduce the density of population, its increase would take place within the bounds of an enlarged urban area. Any surplus to that figure should be accommodated in satellite towns well outside Rotterdam. The plan proposed that less than half of the 25,000 houses destroyed in the town centre should be rebuilt there. Instead, fewer and better houses were to take their place, the balance to be erected in the suburbs.

The Final Basic Plan

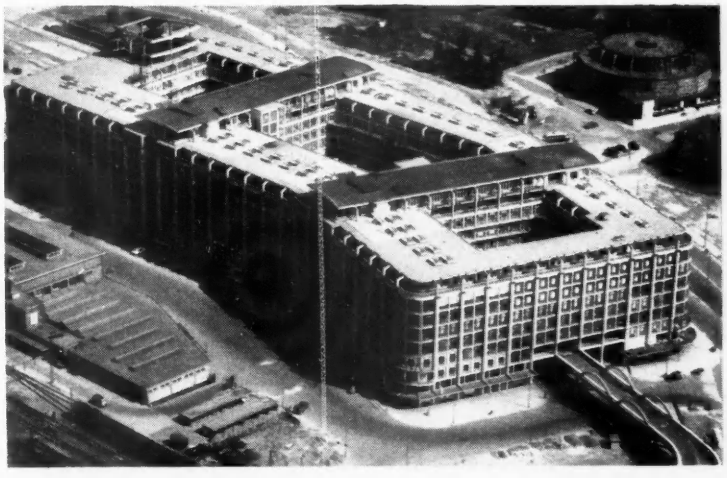
While the war was still in progress, some 5,000 permanent and more than 1,700 temporary houses were built. But at the end of 1944, Rotterdam suffered another setback when the retreating German armies demolished a substantial area of the port. The shipyards were severely damaged, numerous floating docks sunk, and cranes and miles of quay blown up. Soon, however, the city was liberated and planning was able to progress openly and without further interruption during the last months of the war. It was on May 28, 1946, that the basic plan for the reconstruction of Rotterdam was finally adopted by the City Council.

In order to achieve its ends of logical planning, it was essential for the municipality to have the required territory under its direct control. Accordingly, the destroyed city centre was expropriated from private individuals, who were to be compensated and given a prior claim to the tenancy or purchase of a new plot in the reconstructed city. Unfortunately, there were simply not enough funds in the city treasury, even with central government help, both to pay full compensation and finance the enormous building programme. Compensation thus had to be fixed at 1940 value levels.

This has had its effect on matters concerning building forms, in the following way. Small businessmen, among others, found themselves without proper premises and individually unable to afford newly rebuilt quarters. At the suggestion of one of them, the wholesalers (who constitute an important element in Rotterdam life) banded together and agreed that a joint building project with shared ownership might be the best answer to their problem of obtaining premises. It would be less costly than having separate



The Boymans Museum, centre of the city's projected cultural quarter.

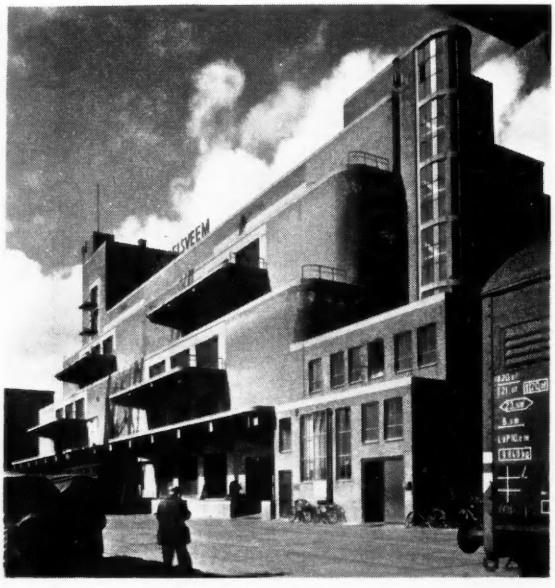


An aerial view of the wholesalers' "collective" building, built after the war.

Modern residential development on the southern outskirts of Rotterdam. In the foreground can be seen the tall apartment block known as the "Flatgebouw."

buildings to accommodate the same number of businesses: and it met with the approval of the municipality, for the scheme acted as a form of functional zoning—an important feature of the new basic plan.

Probably one of the best-known examples of this type of "commercial collective" buildings is the giant structure of the Groothandelsgebouw, or Wholesalers' House. The first of over 3,000 piles was driven into the soft ground, on the site of the old Zoo near the main station, on May 18, 1947; and



A new warehouse in the Rhine-harbour section of dock area.

to-day the nine-storey building accommodates 150 separate wholesale firms. True, this type of building was not unknown before and, in fact, a similar project had been completed in Rotterdam for industry in 1941. But the post-war circumstances of materials and financial shortages gave an undoubted impetus to the idea and, by 1951, another such building—the Industrieflatgebouw—had arisen in Rotterdam.

Functional Zoning

The policy of functional zoning, just mentioned, was felt to be particularly urgent in Rotterdam, where the city had grown up over the previous centuries in a chaotic and piecemeal manner. Thus, a logical and more aesthetic grouping of buildings by function is being carried out in the town. It is to be seen, just for one example, in the concentration of banking houses around the Exchange in the Coolsingel district. Other zoning is instanced in the allocation of workshops and light industry to the east end of the city, while the west is earmarked for the entertainment and cultural life of Rotterdam. There, a new theatre begun during the war was completed in 1946; concert halls will form part of another building, and the modern Boymans Museum a little farther south stands at the centre of an area designated for associated buildings with a cultural purpose. Along Coolsingel lie the important public buildings such as the Town Hall, the Post Office, the Exchange, besides blocks of offices and shops. Architects have been allowed a fairly free hand in their designs: that is to say, no official style has been laid down to which everyone must conform. But the plans of private architects have first to be submitted to the town's architectural supervisors for approval, in order to ensure that no proposed building will be out of harmony with the scale or general appearance of the street.

One of the major tasks to which the plan is committed is the rationalisation of traffic in the new city. Three main north-south and three east-west thoroughfares are projected. The backbone of the town's road system is the Coolsingel avenue. The centre of the thoroughfare is occupied by tramway routes. On both sides of these there is space for a treble line of motor traffic, separate cycle tracks and wide pavements. Besides these major thoroughfares, the plan includes a number of other grades of street: both wide main shopping roads and narrower streets of market category, at whose rears there are small roads for service vehicles only. Other streets are to be reserved for pedestrians, like the arcaded pedestrian passages for shoppers. It is hoped to alleviate the car parking problem somewhat by permitting parking in main streets.

More roads, too, are being cut to lead in the direction of the riverside. The River Maas is one of the predominant factors in the town's prosperity and it is proposed to make it occupy a more prominent place in the urban scene. A new dyke is being erected to prevent the flooding which has plagued the city in the past. This dyke is to be not only utilitarian but will also enhance the appearance of the town, as a spacious tree-lined boulevard, giving views towards the river, will be laid out.

The Maas itself, besides being crossed by the European transcontinental rail line from the Rotterdam D.P. (Delftse Poort) station, has two motor crossings: a bridge and a tunnel. The bridge has long since proved inadequate to contemporary road traffic requirements, while its lowness hinders river traffic, too, and so it is to be replaced farther upstream. The three-quarter-mile Maas tunnel was one of the major construction ventures of the years from 1937 and was actually completed during the war, in 1942. It was preserved, through the vigilance of the city's anti-Nazi resistance movement, from demolition by the retreating German armies in 1944. Built at a cost of some 20m. guilders (or nearly £2m.), the structure consists in fact of four separate tunnels: two for motor traffic (with a capacity for 6,000 vehicles per hour), one for cyclists (capacity 16,000 p.h.) and the other for pedestrians (72,000 p.h.). It supplies a long-needed want for the downstream crossing of the river, as the city expands westwards, and it constitutes part of the important route from Dordrecht in the south of the Netherlands to the capital at The Hague.

Change of Emphasis

Perhaps the most significant change in the new Rotterdam is one of emphasis. For its prosperity in future, the city intends to rely a little less on the port and much more on industry. For after the war, in spite of the astonishing speed of physical reconstruction and modernisation of the port area, its economic recovery lagged worryingly behind the new capacity to handle the ships and their goods. This was very largely due to the fact that the German traffic, which had always formed a considerable proportion of the port's volume of shipping, was at a standstill during the immediate post-war period. Now it is the policy of the authorities to encourage the growth of industry by reserving extensive sites for it around Rotterdam: for example, nearly 200 acres at Spaansepolder, north-west of the town; 550 acres at Eemhaven, at Waalhaven in the south; and the vast Botlek Plan of 3,200 acres for larger industrial undertakings which can use the harbour area to their advantage, in connection with the export of their goods. In this way it is aimed to move industry from its old haunts in the centre to the outskirts, where it has the space to develop, and where facilities of transport and communication are being provided to link it to the highways of commerce, and to the Rhine, which has always been one of the main channels of Rotterdam's prosperity.

INSTITUTION OF STRUCTURAL ENGINEERS

Council Elections, 1956–57

AT THE annual general meeting of the Institution of Structural Engineers, which was held on May 24, the following honorary officers and members of the council were elected for the 1956-57 session :

President: Mr. J. Guthrie Brown, MICE. Vice-presidents: Professor Sir Alfred Pugsley, OBE, DSc, FRS, MICE, FRAeS; Mr. G. S. McDonald, MICE; Mr. L. E. Kent, BSc, MICE; Lt.-Col. G. W. Kirkland, MBE; Mr. F. R. Bullen, BSc, MICE, and Mr. T. Breslin, MICE.

Honorary treasurer: Mr. A. P. Mason, BSc, MICE. Honorary editor: Mr. T. Bedford, MICE, MIMechE. Honorary librarian: Mr. E. N. Underwood, BSc, MICE. Honorary secretary: Mr. John Mason, JP, BA, AMICE. Hon. curator: Mr. W. D. Blades.

Members of the council: Mr. W. D. Christie, Mr. G. C. A. Greetham, OBE, Mr. T. H. Humphreys, MICE, and Mr. D. A. G. Reid, BSc, (Eng), MICE. Associate-members of the council: Mr. B. E. S. Ranger, AMICE, and Mr. H. B. Sutherland, SM, AMICE.

News of the Week

Inspection of Churches

SHEFFIELD Diocesan Conference decided at their annual meeting on June 2 that every church in the diocese should be inspected by an architect during the next five years. This scheme gives effect to the Inspection of Churches Measure (1955). The Archdeacon of Sheffield, the Ven. D. E. W. Harrison, said that the inspection would have to be carried out by architects experienced in dealing with churches, and they would be paid 3 gns. for the work by church councils.

As any halt in building costs seems unlikely, the Sheffield Church Extension Committee has decided to start on a building programme that would absorb any funds they have invested. There is already building work of about £137,000 total contract value going on in the diocese. The committee's statement is included in the 41st annual report and statement of accounts of the Sheffield Diocesan Trust and Board of Finance presented recently to the Sheffield Diocesan Conference.

Public Record Office

THE Public Record Office Museum was reopened to the public on June 13. The Museum stands on the site of the old Rolls Chapel which was demolished in 1896-1900. Of the structure only the chancel arch, re-erected in the Courtyard, still survives. At the time of the demolition a few outstanding tomb monuments and some heraldic glass were preserved and reinstated in the new building. During the recent restoration of the Museum work has has also been carried out by Ministry of Works artist craftsmen on the cleaning and restoration of these tombs. The old glass in the three windows of the south wall has also been reset, the work being carried out by Miss Joan Howson. The show cases have been specially designed to give the best display for the documents in the Museum. The Domesday Book, the outstanding exhibit, has a separate show case carefully designed to give it maximum protection. The room is now heated from coils under the floor.

Register of Architects

THAT VERY useful work of reference, "The Register of Architects," has now been published for this year by the Architects Registration Council. This edition, price 10s., contains 19,027 names as compared with the 1955 one which had 18,484. The register can be obtained from the Council at 68, Portland-place, London, W1.

Cost Control

MR. C. M. NOTT writes to take up two points in our report (our last issue, page 699) of his remarks at the British Architects' Conference discussion on Architectural Economics. In a reference to preplanning, he referred to "the earliest possible co-operation between architect and quantity surveyor and perhaps client, *so that much of the work usually covered by prime cost sums in the bills of quantities could be measured,* enabling the building contractor to get the most complete picture of the scheme as a whole." The italicised words were omitted from the report.

The reference to the addition by a contractor "of up to 5½ per cent. to the tender" should have read: "A contractor would normally add 5 per cent. to cover the high rate of interest on money locked up in the contract."

Leicester University College

PROFESSOR J. L. MARTIN, Professor of Architecture at Cambridge University, has been appointed Planning and Consultant Architect to Leicester University College.

Architects' Appointments

MR. PETER M. BONE, ARIBA, has been appointed county education architect to the Tyrone County Council. Mr. Geoffrey J. Foxley, ARIBA, a senior architect with Derbyshire County Council, has been appointed assistant county architect for Derbyshire.

The assistant county planning officer at the West Riding County Council Planning Department, Mr. Ralph C. Forster, has been appointed deputy county planning officer.

Evidence to Franks Committee

MR. GEORGE LINDGREN, MP, and Mr. Arthur E. Telling, barrister-at-law, have been called to give evidence to the Government Committee of Inquiry into the Practice and Procedure of Administrative Tribunals, under the chairmanship of Sir Oliver Franks, at the public hearing on June 20.

Appointment Open

NEWCASTLE Regional Hospital Board invite applications for the appointment of Deputy Regional Architect. Salary £1,195 rising to £1,425 per annum. Details advertised elsewhere.

LAMBETH PALACE CHAPEL RESTORED: This, for centuries the private chapel of the Archbishops of Canterbury, was gutted by fire during air raids in May, 1941. The photograph shows a general view, looking towards the west window, with the coat of arms of Archbishop Juxon (1660-1663), on top, and that of the present Primate, Dr. Fisher, below. The architects for restoration were Messrs. Seely and Paget. The Queen was present at the rededication last year.

Professional Announcements

MR. REGINALD M. HOLMES, ARICS, chartered quantity surveyor, has moved his practice to new offices at No. 16, Blenheim-terrace, Woodhouse-lane, Leeds, 2 (Tel.: 31064.)

MR. CYRIL G. RADNEDGE, FIAS, has taken into partnership his senior assistant MR. DENNIS G. HALE, ARICS. In future the style will be C. G. Radnedge and Partners, quantity surveyors. The practice will be carried on as before at No. 7, Triangle South, Queens-rd., Bristol, 8 (Tel.: 26359).

E. C. HARRIS AND PARTNERS, chartered quantity surveyors, announce a change of address from 3, Bedford-sq., WC1, to Lynton House, 7-12, Tavistock-sq., WC1, their new telephone number being EUSton 8431.

MESSRS. WOOD AND WEIR, chartered quantity surveyors, have taken into partnership MR. D. BRACEY COOK, ARICS. The style of the firm remains unaltered. As from June 23, their London Office, will be transferred to 5, Wigmore-st., Cavendish-sq., London, W1, and the telephone no. will be Langham 4617.

MESSRS. COTTON, BALLARD AND BLOW, formerly of 133a, Wembley Park-drive, Wembley, Middlesex, are now at 5, Baker-st., London, W1 (Tel.: Welbeck 3364-7).

COMING EVENTS

MONDAY, JUNE 18.

ROYAL INSTITUTION OF CHARTERED SURVEYORS.—"Research and the Rural Landowner," by the Duke of Northumberland. 12, Great George-street, SW1. 2.15 p.m.

TUESDAY, JUNE 19.

RIBA.—"Modern Church Architecture," by Basil Spence, OBE, ARA, ARSA, FRIBA. 66, Portland-place, W1. 6 p.m.

WEDNESDAY, JUNE 20.

LONDON BUILDING AND ENGINEERING CONTRACTORS ACCIDENT PREVENTION GROUP.—General meeting. The Safety Centre, Horseferry-road, SW1. 2.30 p.m.

ARCHITECTURAL ASSOCIATION. — "American Architectural Impressions," illustrated talk by Eric Defty, ARIBA, 34, Bedford-square, WC1. 6.15 p.m.

MODULAR SOCIETY.—Visit to the main administration offices under construction at Shell Haven Refinery. 3.20 p.m.

CENTRAL SCHOOL OF ARTS AND CRAFTS.—Presentation of diplomas and opening of exhibition by Sir David Eccles, Minister of Education. Southampton-row, WC1. 2.30 p.m.

FRIDAY, JUNE 22.

FACULTY OF ARCHITECTS AND SURVEYORS, South Wales and Monmouthshire Branch.—Annual general meeting. St. Mellons County Club, Monmouthshire. 8 p.m.

SATURDAY, JUNE 23.

COUNCIL FOR THE PRESERVATION OF RURAL ENGLAND, Sheffield and Peak District Branch.—Annual general meeting. Longshaw House, Sheffield. 4.15 p.m.

FROM "THE BUILDER" OF 1856

Saturday, June 14, 1856

PATENTS.—Lee, Henry, the younger, of Lambeth, Surrey, contractor, and John Gilbert, of Hackney-road, Middlesex, engineer. Certain machinery for mixing the substances used in the formation of concrete and other like substances. This invention consists in mounting a cylinder or case upon a shaft, and in providing such cylinder or case with an aperture and cover, which forms both the feed and exit passages for the materials. Rotary action is communicated to the cylinder and after having been continued a sufficient time the cylinder is stopped with the aperture downwards, the cover is removed, and the concrete runs out. Half a revolution is given to the cylinder, a fresh charge is inserted, the cover placed over the aperture, and the operation repeated.

GREEN BELTS AND OVERSPILL

County Councils' Responsibilities

MR. DUNCAN SANDYS, Minister of Housing and Local Government, speaking at the annual conference of the County Councils Association, at County Hall, London, on June 7, said that county councils had a vital role to play in maintaining a vigorous and healthy system of local government. Their functions were varied and many-sided; but on this occasion he proposed to concentrate mainly on their planning responsibilities.

County Councils were first given responsibility for planning by the Town and Country Planning Act of 1947. If town and country planning was not to be brought into disrepute, it was essential that these extensive new powers should be exercised with tact, discretion and common sense.

Two Special Problems

"I would like to refer in particular to two problems which raise issues of special difficulty for county councils. One is the establishment of green belts; and the other is the planning of development to accommodate excess population from the big cities," continued Mr. Sandys.

"It is now generally agreed that our cities should be contained within reasonable bounds and that those which are already too large should not grow any larger. It is for this purpose that green belts are being established. I am very well pleased with the response of planning authorities to the circular about green belts which I sent out last year.

"I have already received green belt proposals in respect of about a dozen of our major cities. If I may single out two sets of proposals for special mention, the sketch plans for Birmingham struck me as particularly good; I was also pleased to see a realistic green belt for Oxford submitted over the signatures of the two counties concerned and the county borough.

"However, it does not follow that every town should have a green belt around it. Nor, in places where a green belt is necessary, should it be drawn too tight. In particular, county councils should be careful to avoid giving the impression that they are influenced by a fear of losing rateable value either through extensions of county borough boundaries or future claims to county borough status.

"I realise that this is a hard doctrine. But I think you will agree that it is better to concede legitimate claims graciously than to engage in a prolonged and futile controversy."

The restriction of the growth of a city by the establishment of a green belt made it more than ever necessary to provide a planned outlet for its excess population beyond the green belt. It followed that county councils must be prepared (if possible in agreement with the district councils) both to propose suitable places for new development and to help district councils in carrying it out.

"I think we must agree," the Minister went one, "that the progress of town expansions, under the Town Development Act, has so far been disappointing. It is usual to blame the Government for this on the grounds that they have not provided sufficient financial assistance.

"But I do not think that is true. The Government have offered a 50 per cent. grant towards the cost of site development and an increased subsidy towards the cost of housing. It is difficult for the Government to offer much more than this for the creation of assets which local authorities are to control and the benefits of which are to inure wholly to them. With this aid a well-planned town expansion should provide a profitable long-term investment.

"If county councils do not take a more active part in promoting town development, then they must not be surprised if the authorities of the overcrowded towns seek to adopt their own methods for solving their problems—including the use of the compulsory powers provided by Parliament. County councils bear a large responsibility for making the Town Development Act work. I would, therefore, like to see many more of them actively encourage their district councils to accept the principle of expansion, for the purpose of absorbing overspill population from the large cities.

"I recognise that the economic climate is at present unfavourable for major capital investment. But these town expansion schemes require a large amount of detailed preliminary planning and I hope that county councils and district councils will go ahead with the preparation of schemes which could be started as soon as the general situation improves."

GOVERNMENT SPENDING AND INFLATION

Part of Nationalised Industries

EVERY realistic business man in Britain was striving to do all he could to restrain the rising cost of goods, MR. E. M. TATLOW, the retiring President, told Building Industry Distributors, at its annual meeting at Torquay, on June 12. "The builders' merchant trade will do everything in its power to stabilise prices, to help our country to overcome the besetting difficulties of the times," Mr. Tatlow said, "but to do so we must have a clear lead and definite example from all the big Government spending departments.

"The profligate spending by successive Parliaments of the nation's wealth on many hare-brained and wasteful schemes has not only been a bad thing in itself but, worse still, it has been such an evil example that, coupled with the highest taxation in the world, thrift and saving have practically disappeared from this island," he said. By improved methods of handling and better organisation, builders' merchants had proportionately reduced their costs of distribution and in the rising spiral they had, by such methods, absorbed many of their increased expenses, said Mr. Tatlow. "We are continually, however, being discouraged by the increases in charges for the products of the monopolistic nationalised industries, on which are based so much of the production costs of all goods. Some of the manufacturers in our industry were the first to steady and hold their prices. We welcome this, and hope and believe that their example will be followed so that at first prices are held firm. That must come first, before one can hope for the longed for reductions."

ARCHITECTURE IN NORWICH

Some Comments to Rotarians

SOME comments on architecture in Norwich as he saw it were made to Norwich Rotary Club on May 30 by MR. IAN LESLIE, OBE, JP, Hon.ARIBA, Editor of *The Builder*. The meeting was held in the Samson and Hercules House under the presidency of Mr. Theodore Scott, MC, FRIBA.

The speaker first gave a "potted history" of the Royal Institute of British Architects which, he said, had a membership of 17,000 practising architects, nearly 20 per cent. of whom were working overseas. In that way, and through its allied Societies which numbered 100, the RIBA exercised an influence which was not only nation-wide but world-wide.

Turning to the impact of architecture on the city of Norwich, the speaker said that he found Norwich architecturally a most curious mixture. "On the one hand there are the Cathedral, one of the noblest buildings in Britain, the delightful alleys and side streets, the Close, Pull's Ferry, Elm Hill, the Assembly Hall, Tombland, and so on; on the other, such messes as the area round Thorpe railway station, Ber-street, the dreariness which is a characteristic of much of the housing estate work, both public and private, and a number of individual buildings, only a few of which, I should think, will stand the test of time." There were some noticeable exceptions, but they were not as many as one would like to see.

The Client's Responsibility

It would, of course, be easy to unload the blame on the architects who designed buildings, the speaker continued. It was true, of course, that they must bear some measure of responsibility and could not escape it. But it was never to be forgotten that an architect's prime responsibility was to give his client the kind of building that the client wanted.

"The truth is that each age in general, and each town and city in particular, gets the architecture it deserves. It is the greatest of architectural fallacies that great or even good architecture can be produced in a climate that is unsympathetic to good architecture; it is difficult for an architect, however talented, to go far ahead of his client, for that client today is seldom an individual and all too often a board or a committee, where to quote the poet 'those behind cry forward and those in front cry back.' The result sometimes is to play for safety; for most people that means falling back on the things they are familiar with.

"I do not pretend that the solution is easy or that there is any royal road to achieving fine results. In a city like Norwich where you have such a heritage of fine building there is—there must be—a great temptation not to conflict with buildings next door. Some people call this good manners, but it can lead to mere copyism. You have some of this in Norwich today, and one sees it in a good deal of brickwork without the breath of life in it, some of it leaning rather far backwards not to give offence to some treasured building from the past.

"And where you find such an attitude, you also get a reaction—an impulse to be different at all costs, and this is an equal, even a greater, sin.

"Both these attitudes to me seem to be wrong. We should use the past as an inspiration, not as an example to copy or as something that must be changed at all costs.

"We should remember that the old buildings that we all admire are manifestations of structural styles which now are obsolete. Multi-storeyed buildings are now designed in a much more difficult age—an age in which designers are largely freed from the discipline of structure—and that this makes good design not more simple but vastly more difficult for the architect.

No Easy Solution

"I have not got a solution for you, but only two suggestions. One is that those who commission architecture should study architecture, as did the great patrons of architecture in the 17th and 18th centuries. This study is rewarding in itself, for architecture is not only the Mistress Art but the Art which comes closest to the ordinary man's life.

"The second thing is that when you come to build, you should choose an architect whose work you know and like, and then give him your full confidence. I would say that there must always be a responsibility on those who live in a city so well endowed with fine building as this to allow nothing which will detract from its charm. But a city is a living thing, it must go forward or it must die away, and I put it to you with all the earnestness at my command, that more damage can be done by faintheartedness than will ever be committed by commissioning architecture which is an honest reflection of the best in its day and age."

Questions followed, and a vote of thanks to the speaker was proposed by MR. H. C. BOARDMAN, FRIBA.

OBITUARY

J. A. Dempster, FRIBA

WE have received from Mr. C. G. Kemp, FRIBA, the following memoir of Mr. Dempster, whose death was briefly reported in our issue of May 25.

John Austin Dempster who died in Sheffield on May 10, at the age of 64, will be remembered for his contribution to the welfare of mining communities. He began his architectural career as a pupil in Glasgow, and at Glasgow School of Art where he was influenced at an early stage by the work of John Rennie Mackintosh. His love of the western highlands and interest in landscape led him a few years later to become an assistant to Thomas Mawson of Lancaster with whom he obtained some of the best experience then to be had in the art of landscape architecture.

After further architectural experience in the offices of Thomas Tait and Sheffield Corporation—also, on his return from service with the Gordon Highlanders in the 1914-18 war, with HM Office of Works—he set up in private practice in London in partnership with P. C. Boddy. Messrs. Boddy and Dempster submitted designs in several architectural competitions, including Topsham Village Hall, which they won, and Calcutta Council Chamber. Although their design for the latter was not placed first it was considered by some to be of the greatest merit. Shortly afterwards John Dempster decided to give up private practice.

In March, 1928, he was appointed architect on the staff of the Central Miners' Welfare Committee, and then began a period of service to the coal mining industry which was to continue, virtually unbroken, for 28 years until his death, a record that is unsurpassed by any other member of the Committee's Architects Department. For the Central Miners' Welfare Committee and later the Miners' Welfare Commission, he was architect in charge of numerous pithead baths, social welfare buildings and recreation grounds, chiefly in Scotland and the north of England, two of his more notable works being the surface buildings, including pithead baths, for a new colliery at Comrie in Fifeshire and a community centre at Kells near Whitehaven in Cumberland.

About 1930 he became keenly interested in the work of Dudok and travelled to Holland to take a close look at it. The visit made a deep impression on him and what he saw immediately influenced his work. He was in his element in this work, partly, perhaps, because he was in complete sympathy with the welfare aspect of it, also because he found in it a means of expressing himself more coherently in the architectural sense. He became a well-liked and respected member of an architectural team which worked harmoniously and enthusiastically together to such good purpose for the 11 years preceding the 1939-45 war.

On transfer to the nationalised coal industry he became Chief Architect of the North Eastern Divisional Coal Board, a post which he held until he died. He had qualified for Associateship of the Royal Institute of British Architects in 1921 and was elected a Fellow in 1936. He was also an Associate of the Institute of Landscape Architects.

John Dempster held very strong views about most things for which he cared and often expressed them forcefully and amusingly. A predilection for the mixed metaphor and a belief that everyone liked golf were two of his better known and more amusing idiosyncrasies. He would have been the last person to wish to be delineated as a paragon but he personified—"A man's a man for a' that"—and those who knew him well will remember him as a sincere, loyal, generous and likeable man.

W. M. Robertson, FRICS

MR. WILSON MATHIESON ROBERTSON, FRICS, former chairman of the Scottish branch of the Royal Institution of Chartered Surveyors, died suddenly on June 1. Mr. Robertson, who was 65, had been attending the golf meeting of the Scottish branch of the Institution at Gleneagles Hotel. He was well known throughout the country and was in private practice as a land agent. He was land adviser to the Scottish Hydro Electric Board.

Peabody Fund Report

Their ninety-first annual report and accounts has been issued by the governors of the Peabody Donation Fund. The report states that construction of 192 flats at Roscoe-street, EC1, has continued satisfactorily and that the first block of flats is being let to applicants on the LCC's housing lists.

BUILDING MATERIALS

Holding Prices: The Next Step?

(By Our Special Representative)

IN December last, the makers of Portland cement took the imaginative step of agreeing that "until at least June 30, 1956, there will be no rise in the present price anywhere in the United Kingdom."

The reason (as then given by Sir Malcolm Trustram Eve, chairman of the Cement Makers' Federation, on which all 10 independently controlled cement makers are represented) was that it had become vital in the public interest that some positive and definite action should be taken to slow down the inflationary spiral. "The hope," said Sir Malcolm, "is that other industries will feel able to take similar action; we realise that the effect of this action by itself can only be small, but are sure that if it were to start a snowball, really important results would certainly follow."

Following a Lead

The CMF lead was followed, and not only by manufacturers. Of the latter, about 20 firms or associations—makers of plaster board, joinery, ballast and sand and bricks among them—declared a standstill on prices for the most part until the end of June but in several cases until December next. At least one old-established firm of builders' merchants made the gesture of announcing that for six months from March 1 it would charge no increases and give customers the benefit of any decreases.

Thus encouraged, the National Federation of Building Trades Employers increased the contract price limit within which its members were recommended to waive the materials fluctuations clause in Government contracts from £3,000 to £5,000. The London Master Builders' Association went further by recommending that the increased limit should apply to all contracts, private as well as Government, entered into by its members. The Eastern Federation recommended its members not to pass on any increases in materials on contracts of any size and for any client for a 3-month period.

The Next Step

What happens now? The industry is awaiting with a good deal of interest the next step, the more so in view of the decision by the Ministry of Works to conduct what it calls "a limited experiment" in the direction of fixed-price tendering (see *The Builder* of May 18). Will the materials manufacturers who made their forward-looking gesture in the New Year now repeat it?

Preliminary inquiry shows that the question is now under active consideration, and decisions from all may shortly be expected. So far, only one organisation has announced its plans. The builders' merchants, Messrs. Rownson, Drew and Clydesdale, Ltd., state that they have every intention of renewing the undertaking for a further period of six months: "It is our earnest hope that by the expiry of that period, wisdom and restraint on the part of manufacturers, merchants, trade unions, wage earners and nationalised industries will make further extension unnecessary," adds the firm, which states that one or two manufacturers who increased their prices subsequently to March 1 were good enough to refrain from charging them the increase.

Precept and Practice

It is not easy to see, just the same, how manufacturers generally can comply with the Government's exhortation to hold prices. There are still wage claims outstanding, not only that by the woodworkers for an additional 9d. per hour which, it is expected, will come before the Operatives' Union for general adoption, but those for a shorter working week and higher pay for holidays. As from June 1 coal has gone up an average of 6s. per ton (or 8 per cent. at pithead) and coke has also risen by an average of 8s. 11d. per ton. As Messrs. Beckett, Laycock and Watkins, Ltd., write in a News-letter which goes to their agents and representatives: "The repercussions of this increase will percolate throughout the whole of the industry. As an example, the steel industry's fuel bill will be increased by about £8m. in a full year. It has also been forecast by Lord Citrine, the Central Electricity Authority's chairman, that Electricity Area Boards are likely to raise prices within a few weeks; the coal price increases will cost the industry about £11½m. a year. The cost to the British Transport Commission will probably be about £4½m. a year as a result of the coal increase. The rise increases the likelihood of higher rail fares and freight charges in September."

Nationalised Industries' Wages

The short point is that with the increasing frequency of price increases by the nationalised undertakings and the recurring wage claims by the building Trade Unions, it is going to be difficult for building materials manufacturers to continue to hold their prices unless they get Government support. As a brick company writes: "The tail has been trying to wag the dog."

Questioned on this matter in the House of Commons on May 29, by Mr. Nabarro (see *The Builder*, June 8, p. 703), the Minister of Works, Mr. Buchan-Hepburn, said that a policy of stabilising the charges of the nationalised industries was a question not for him to answer; it was for the Ministers concerned with the nationalised industries. This is undoubtedly so, and really involves the Cabinet. The building industry would undoubtedly support a move to peg the prices of coal, electricity and transport, and wages also. In that way the road would be open to a more general return to the fixed-price contract which in turn, through the general sharpening-up of efficiency in pre-planning and in contract management, would inevitably result in the reduction of the cost of building.

The next step is with the Government.

COST DATA

RICS to Set up Research Panel

THE Council of the Royal Institution of Chartered Surveyors have, on the recommendation of the Quantity Surveyors Committee, decided in principle to encourage participation in the field of cost investigation on the following lines:

(i) that a research panel be formed of a small number of Institution members consisting of, say, three quantity surveyors and one building surveyor, with representatives of the Building Research Station and such other organisations as it may be considered desirable to co-opt;

(ii) that the terms of reference of the research panel should be:—

(a) to keep under review the sources of cost information available to the building industry;

(b) to examine cost relationships for design alternatives and to draw conclusions therefrom; and

(c) to consider the factors which cause the cost of similar items of building work to vary, including the effect of standardisation and repetition in design;

(iii) that the research panel should consider the possibility of the creation of a focal point to collect information; and

(iv) that the research panel should be given suitable financial backing by the Institution in order that honoraria or other grants might be made available, subject to the approval of the Council, to those providing or carrying out research or investigation into building costs.

NEW INFORMATION CENTRE

Trial Period at Sheffield

AN information centre, where builders, architects and others concerned with the industry can have their technical problems dealt with, opened for an experimental period on June 11 in the Department of Building, Sheffield College of Technology.

The Ministries of Education and Works are supporting the College in the venture, the first of its kind in Yorkshire, and if it is successful, similar centres may be opened in other areas.

The centre provides a channel through which research carried out by such bodies as the Building Research Station can be brought to bear on building problems in the area. Improved contact will also be possible between the industry, the college and research and information services concerned with building. In addition, research workers will have the opportunity of keeping in touch with the industry's needs in South Yorkshire, North Derbyshire, and North Nottinghamshire.

The library in the Department of Building will be available for reference, and technical inquiries on all aspects of building will be welcomed by the head of the department, who will work closely with the Ministry of Works Technical Information Section in operating the service. If necessary, the Ministry's Technical Information Officer will visit sites and discuss problems as they arise.

IN PARLIAMENT

By Our Parliamentary Correspondent

Factory Building in Development Areas

THE Opposition were far from satisfied with the announcement by MR. DEREK WALKER-SMITH, Parliamentary Secretary, Board of Trade, in the Commons on June 5, that the Government had decided, as an economy measure, to defer all proposals for the provision of new Government-financed factories or extensions under the Development of Industry Act, except in a few cases of importance or urgency.

This decision was, said MR. HAROLD WILSON, a major change in development area policy, a description which MR. WALKER-SMITH instantly denied, preferring the definition that it was "merely a change in the tempo of the application of the machinery of the Act." Whatever that implied it did not pacify Mr. Wilson, who insisted that it was a major change, and indicated that the Opposition would raise the matter in an early debate.

Later, MR. GEORGE BROWN sought to relate the decision to the Government's proposals to ease the transfer of labour which would arise from the introduction of automation into industry. It would be contended, when questioning the Prime Minister on the matter, give the people displaced or affected by automation "a great deal of fear that there would not be the jobs to which they could move."

MR. WALKER-SMITH informed the House that no application for an industrial development certificate for a privately financed factory had been rejected in the last six months. No precise figures of the numbers of applications for the building of Government-financed factories which had been rejected were available, as no statistics were kept of inquiries or proposals which were tentative or obviously without claim on Government finance.

"No applications outside this latter category," he went on, "have been finally rejected in the period. But, in view of the need for the strictest economy in Government expenditure, it has been necessary to defer consideration of all proposals for the provision of new Government-financed factories or extensions under the Distribution of Industry Act, save in a few cases of special importance or urgency.

"The applications which may qualify for this special category are under consideration, and the remainder have been deferred. The latter will be reviewed as soon as economic circumstances permit."

MR. WILSON asked if the decision meant that the Government were refusing to build factories, many of which might be essential, if they had to be built on Government account, but there would be no control of inessential private factory building.

"Policy of Lunacy"

MR. DOUGLAS JAY asked whether it was not unprecedented at any time since the war for the Government to refrain from building factories in development areas on the ground of saving money. It was a policy of lunacy to try to help the country out of its difficulties by not building new factories.

MR. WALKER-SMITH said he was sorry if Mr. Jay found the policy of trying to save money unfashionable. He would have thought on the contrary that it was right to review the application of the machinery of the Act in accordance with the general economic circumstances.

MR. WILSON then inquired why the Board of Trade had rejected the proposal to build an extension to a factory on the Huyton industrial estate, in view of the contribution that would be made to employment in the district and to exports including dollar exports.

MR. WALKER-SMITH said that the company had been informed in March that the department could not, in current circumstances, approve their application for the building at public expense of a large extension to their existing factory, and they had substituted a smaller scheme which was now under consideration.

MR. WILSON asked whether it was not a fact that essential factory building of this kind was being postponed in the economy drive, but the Government had refused to take powers to make corresponding cuts in inessential building which did not help the export trade.

MR. WALKER-SMITH said that this matter fell into the category of importance and urgency which he had mentioned earlier, and a decision about it would be made very soon. In reaching that decision both employment and the export contribution would be taken closely into consideration.

Scottish Figures

Mr. Walker-Smith, in a circulated statement, stated that according to the latest information available to the Board of Trade, the area of new factory space completed in the Scottish development area in each of the last four years was:—

1952, 2,037,000 sq. ft.: 1953, 2,341,000 sq. ft.: 1954, 2,159,000 sq. ft.: 1955, 2,168,000 sq. ft.

The comparable figures for the developing coalfield areas of east and west Fife, Alloa and the Lothians were:—

1952, 168,000 sq. ft.: 1953, 158,000 sq. ft.: 1954, 242,000 sq. ft.: 1955, 99,000 sq. ft.

All those figures, he added, related to new factories and factory extensions of more than 5,000 sq. ft. for which industrial development certificates had been issued. They did not include new buildings and extensions approved for the National Coal Board.

SIR ANTHONY EDEN, the Prime Minister, in an outline of the Government's attitude to the difficulties that were arising in industry because of the impact of the economic policy and automation, said that to achieve their object—that of safeguarding full employment by improving the balance of payments and strengthening the reserves—changes in the use of resources and labour had to be accepted.

"As successive Governments have recognised," he said, "full employment does not mean that every individual is guaranteed his particular job for as long as he wishes to stay in it. Changes in our pattern of employment are a necessary condition of full employment as a whole. The Government will, of course, do all they can to ease the process of transfer for the individual worker.

MR. GEORGE BROWN suggested that general statements were all right, but what was worrying at the moment was that there seemed to be no provision to enable men who were displaced to become mobile by moving elsewhere. There were no houses for them to live in, and no arrangements for travelling time. The statement about new factory building would create fears about lack of jobs.

SIR ANTHONY did not think Mr. Brown's fears were justified, and he cited the arrangements that were being made in the Midlands to deal with the excess of labour over jobs there.

MR. BROWN felt that there was a danger of running into trouble unless this matter was faced, and urged the Prime Minister to consult industry and the trade unions who were worried, and take some firm action himself.

SIR ANTHONY pointed out that there were some things which the Government could do, and there were things that were best left to industry to do without Government interference. He realised the great importance of this matter, and the Government would continue to watch it carefully. But he was not inclined to be as pessimistic as Mr. Brown.

He said, in reply to MR. SHINWELL, that he would consider issuing a White Paper setting out what the Government had in mind about the transfer of men from industries where they were regarded as redundant and what they thought they could do about easing the strain.

Mounting apprehension about the possible effects of automation has led the Opposition to press for some clearer indication of the Government's intentions. They have, however, been far from satisfied about the statements by the Prime Minister and the Minister of Labour, and have been demanding a debate in which the matter can be examined in detail.

The Government, while fully recognising the vital importance of the subject both to the nation's economy and social life, have not been able to accede to the Opposition's request to provide time for such a debate. Their parliamentary time-table is already more than full. There are several controversial Bills, two of them of a highly contentious nature, still in progress through the Commons and yet to be considered by the Lords, which means that little room is left for manoeuvre if all the essential legislation is to be passed before the end of the session.

Economy Cuts and Building

THE Government's scrutiny of current departmental expenditure, and the methods by which reduction can be effected in it to achieve the target of £100m. promised by Mr. Harold Macmillan in his Budget statement two months ago is proceeding satisfactorily.

Recently the Opposition have been increasing their pressure for some indications of the way in which the Chancellor's mind is working on this topic, but all they have been able to secure is an undertaking that an announcement would be made when this examination is concluded.

No statement of the economies proposed can be expected much before the House rises at the end of next month for the summer recess. The estimates on which those cuts will be based are not usually presented

until next month, and doubtless the pruning process will be in operation until the last minute.

There has been much speculation of late about which services will, or might, contribute to the Chancellor's £100m. Frequent suggestions have been made, and numerous ideas canvassed, so that it would seem that Mr. Macmillan has as many possibilities for effecting economies as there are members in the House.

Many members, particularly among the Opposition, have been loud in their demand for cuts in defence expenditure, and while there is every possibility that Mr. Macmillan will look to this aspect of his Budget to bear some, if not the major, share of the target other departments will be expected to play their part.

Some reduction in building activity is bound to result from this operation, in addition to that curtailment which has already arisen from the workings of the Chancellor's monetary policy, more particularly the credit squeeze. Up to now the Government have put their faith in this method, and so far there is little evidence to show that their trust has been misplaced.

That does not mean that they have abandoned any idea of returning to more unorthodox, and to them distasteful, measures, but present indications are that the method of free enterprise is working satisfactorily. In some areas, particularly the Midlands, the trend has been towards a diminution in building operations, but elsewhere, especially in London, where up to £20m. of office building is in progress, the material effect has not been great.

Although the Government have had the question of a return to building controls under consideration no final decision about their reintroduction has been reached. The Government are probably waiting to see whether the further operation of the credit squeeze will achieve the objects they have in mind, but the use of some form of control would help Mr. Macmillan in his task if time showed that this would not be so. Such a move would not be popular among Conservative members, but both the Prime Minister and Mr. Macmillan have firmly indicated that they are prepared to eschew public and political favour by not hesitating to introduce any measure, however unpopular, if it will in the end lead to stability in the economy.

Legislation, however, would be necessary to effect the reintroduction of building controls. Although it would only be a small enabling Bill it is doubtful whether, at this stage of the session, time could be found to pass such a measure through Parliament. One method, which could be carried out by administrative order, by which there could be a control of office building would be the allocation of steel.

There has long been a demand for this from the Opposition, but Mr. Peter Thorneycroft, the President of the Board of Trade, has shown a general reluctance to consider such a proposal. Indeed a few weeks ago he was rejecting it out of hand, but here, as with building controls, the swift march of adversity may dictate a change of opinion. But until existing policy has been exhausted, and has failed, extinct policies will not be revived.

Restrictive Trade Practices

THE Government's Bill to deal with restrictive trade practices and other monopolistic tendencies reached its final stages in the Commons during the week. More than 70 amendments, including several new clauses, were tabled by the Government for the report stage which began on June 13. One new clause enabled the Lord Chancellor to increase the number of judges of the High Court to enable the membership of the Restrictive Trade Practices court to be increased. Another gave the Board of Trade power to give the Registrar directions authorising him to remove from the register particulars of such agreements as appeared to be of no substantial economic significance. Such directions would be issued on representations being made to the department by the Registrar.

Further provision is made for the High Court, if it is satisfied that default has been made in furnishing particulars, to authorise the Registrar to treat as particulars furnished under the Act any document or information in his possession relating to the agreement, or order any person who may be a party to the agreement to furnish particulars within a specified period. The High Court is also given power to order the examination of any person given notice under Section 11 of the Act which deals with the obtaining of information by the Registrar about the operation of agreements.

OTHER BUSINESS

Government Buildings

LIEUT.-COL. LIPTON asked the Minister of Works how many additional square feet of office accommodation had been provided for Government departments in London since October 1951; and what was the total cost.

MR. BUCHAN-HEPBURN replying on May 29 said: Excluding Post Office accommodation, new hirings and new Crown buildings in the period mentioned amount to 1,243,000 sq. ft. at an annual cost of £530,000. But against this 2,650,000 sq. ft. of office space has been given up, at an annual saving of £936,000. Since October, 1951, there has been a net reduction of 1,400,000 sq. ft., and a net annual saving of £406,000.

LIEUT.-COL. LIPTON asked the Minister how he justified the continued expansion of Government building when 50,000 fewer people had been employed in the civil departments in the last five years. What, he asked, was the use of the Government asking other people to economise if they did not set an example.

MR. BUCHAN-HEPBURN pointed out that Government building had been very much curtailed, but behind his answer was the fact that they were surrendering requisitioned property, which he was sure Lieut.-Col. Lipton agreed with, and replacing it with hirings and to a smaller extent by new buildings.

Caravan Sites

MR. JAMES JOHNSON asked the Minister of Housing and Local Government what local authorities had submitted plans for his approval about sites for static residential caravans.

MR. POWELL: Since 1952, approval has been given to proposals from the following local authorities for the provision of residential caravan sites to be owned by the local authority:

County borough councils: Coventry; Darlington; Exeter; Portsmouth; West Bromwich; Worcester.

Borough councils:—Andover; Chesterfield; Maidenhead; Morecambe and Heysham; Newcastle-under-Lyme; Nuneaton; Peterborough; Reigate; Scunthorpe; Uxbridge.

Urban district councils:—Bushey; Cannock; Chesham; St. Austell; Spalding; Woking; Yiewsley and West Drayton.

Rural district councils:—Chesterfield; Eton; Holderness; Rugby; Winchester.

Proposals from the following local authorities are under consideration:—Barnsley; Maidenhead; Hayes and Harlington; Sunbury-on-Thames.

Nuclear Power Programme

MR. CHETWYND asked the Minister of Fuel and Power what action was being taken to accelerate the programme for the development of atomic power plants.

MR. AUBREY JONES in a written reply on June 4 stated.—I believe that in due course it will be possible to accelerate the original nuclear power programme. But until plans for the design and construction of the first nuclear power stations have been received from industry and considered by the Central Electricity Authority, no firm re-appraisal of the programme is possible. These plans are due to be submitted this autumn.

Maidstone By-pass

SIR ALFRED BOSSOM asked the Minister of Transport and Civil Aviation, in view of the fact that the Kent County Council had unanimously approved the plans for a by-pass for Maidstone and one for the Medway towns, if he would state when the Maidstone by-pass would be started and give an estimate when it would be available for general use.

MR. HAROLD WATKINSON in a written reply on June 5 stated.—I know the views of the Kent County Council, but I must also consider the representations which have been made to me in favour of an alternative central road through the county. I will reach a decision on this difficult and important matter as soon as I can.

Damage by Frost

MR. HASTINGS asked the Minister of Housing and Local Government if, as a result of his departmental inquiry, he could give an estimate of the extra cost to local authorities in England and Wales resulting from burst water pipes in houses owned by them during the winter of 1955-56.

He also asked the Minister what advice he was giving to local authorities for the avoidance of inconvenience and loss resulting from burst pipes in the houses they were now about to build.

MR. DUNCAN SANDYS in a written reply on June 5 stated: The first stage of my inquiry into the problem of frozen pipes is now completed. A survey, covering about one-quarter of all houses owned by local authorities in England and Wales, has been carried out with the object of ascertaining the causes of trouble. The information derived from the survey is now being studied and the results will be discussed with the professional, trade, and local authority associations principally concerned. In the light of these discussions, I shall decide what action should be taken.

Housing Sites, Manchester

MR. WILLIAM GRIFFITHS asked the Minister of Housing and Local Government whether he was aware of Manchester's urgent housing needs, and of the growing concern in that city arising from his delay in deciding which overspill sites he would approve; and whether he would make a statement.

MR. SANDYS in a written reply stated.—I am well aware of Manchester's serious housing shortage. Apart from the slum areas which are to be cleared, the city will before long run out of land for new house building within and around its boundaries. The excess population will have to be accommodated further afield. Unfortunately Manchester Corporation have, despite many discussions over a long period, been unable to agree with the councils of the adjoining counties on enough suitable sites to match the city's house building programme. In view of this prolonged deadlock, I am now considering what action should be taken; and I will make a further statement in due course.

Water Supplies

MR. GRIMOND asked the Minister of Housing and Local Government if he would take action to improve and co-ordinate water supplies.

MR. SANDYS: A great deal has been done in recent years to develop water supplies, including the increase of storage capacity, improved purification arrangements and the extension of piped supplies to rural areas. Much information will be found in the last report of my department. Recently I have re-constituted the Central Advisory Water Committee for England and Wales, and at my suggestion, that committee has put in train an investigation into the growing demands for water for all purposes, and into the most practical methods of meeting that demand.

Minister's Visit to Russia

MR. ARTHUR LEWIS asked the Minister of Housing and Local Government, if he would make a statement on his recent official visit to Russia.

MR. SANDYS in a written reply stated.—This was a return visit following one to Britain last autumn by Mr. Kucherenko, Soviet Deputy Prime Minister and Chairman of the Council of Ministers for Construction. In addition to my stay in Moscow, I spent a few days in Leningrad and in Kiev, and I was shown something of the progress of housing, town planning and reconstruction in each of these three cities. Before my departure, I had the opportunity of informal talks with Mr. Bulganin and Mr. Khrushchev.

Roof Garden for Bristol Flats

MR. AWBERY asked the Minister what his reasons were for refusing to agree to the proposal of the local authority for a roof garden on the 15-storey block of flats to be erected at Barton Hill, Bristol, when a garden could not be provided on the ground.

MR. ENOCH POWELL, Parliamentary Secretary, Ministry of Housing and Local Government, in a written reply stated.—The Minister has not refused to agree to the provision of a roof garden to these flats.

Smoke Arrestor Experiment

MR. SWINGLER asked the Minister of Housing and Local Government, what report he had received from the district alkali inspector about the experiment with a smoke arrestor, carried out at Chesterton, Newcastle under Lyme, on May 23, and to what extent his department would promote the use of such devices in the campaign for clean air.

MR. SANDYS in a written reply on June 5 stated.—The Inspector informs me that he attended a most interesting demonstration of this equipment. However, much fuller information and more prolonged experiments are needed before I could give a reliable opinion about its practicability and effectiveness in regular use under normal conditions.

New Patent Office

MR. FREDERICK WILLEY asked the Parliamentary Secretary to the Ministry of Works, as representing the Lord President of the Council, when the departmental discussions about a new Patent Office and Scientific Reference Library would be completed.

MR. BEVINS in a written reply on June 5 stated.—These discussions, which include the question of a suitable site, are being vigorously pursued, but I regret that I am unable to say when they will be completed.

SCHOOL FURNITURE AND EQUIPMENT

Ministry Circular on Costs

SIR DAVID ECCLES, the Minister of Education, has decided to limit the initial expenditure by local education authorities on furniture and equipment in new educational buildings. A Circular (No 304) to local education authorities, dated June 6, states that the limits of costs, now introduced for the first time, have been calculated after detailed study of the standards and practice of many authorities. The following scale of provision reflects good average, but economical, practice and the prices are sufficient to buy well-designed articles of serviceable quality:—

A. *Primary Schools:* Primary schools smaller in size than 1 Form Entry (40 new pupils a year) and extensions to accommodate less than one further Form Entry at existing schools: Ten per cent. of the limit of nett cost for the building work. Primary schools of 1 Form Entry or more: £14 per cost place.

B. *All-age day special schools for Educationally Sub-normal children:* Five classes or less, £23; six or seven classes, £22; eight classes and larger, £20 per cost place.

C. *Secondary modern and grammar schools, cost per place:*

Size	Secondary modern £	Secondary grammar £
1 Form Entry (30 new pupils a year)	32	—
2 Form Entry	28	33
3 Form Entry	26	30
4 Form Entry and larger	24	28

The limits in "C" above are calculated on the needs of boys' schools. The cost per place for girls' schools will be £1 less and that for mixed schools 10s. less.

For technical, bilateral, multilateral or comprehensive schools, school clinics and special schools other than those in "B" above authorities are asked to submit for the Minister's approval detailed lists of furniture and equipment they propose, giving the estimated cost of each item. The above limits of cost are intended to cover all major items of furniture and equipment except as follows:—

(1) items which are part of the normal nett cost of the buildings; e.g., built-in furniture, which the Minister encourages, and fittings such as wash basins, sinks, towel rails, light fittings, fire-fighting points, etc.;

(2) items provided exclusively for the school meal service;

(3) items of minor equipment generally; in particular, all consumable equipment, and all other equipment costing less than £2 per unit.

In order to help authorities find a sound economical distribution of expenditure within the cost limits the Ministry have issued, as a guide, some notes on teaching spaces in schools which are usually complicated or expensive to furnish and equip.

Assembly Halls and Stages

Heavy cotton or similar materials should prove satisfactory for proscenium curtains. Only basic lighting equipment need be provided for the stage, leaving the remainder to be added by the school as it develops. The cost of a hall equipped to a standard of this kind, allowing for other incidental items, such as a table and a piano, need not exceed about £1,100. If the hall is also to be used substantially for physical education another £200 may be needed for some specialised equipment.

Gymnasia.—The total cost of both fixed and portable apparatus for a single gymnasium need not exceed £1,000. Some authorities have been able to equip a gymnasium for about £800.

Science Laboratories.—The most costly laboratories are likely to be in grammar schools, but it should be possible in such cases to furnish and equip a chemistry laboratory and preparation room for about £1,300 and a physics or biology laboratory and preparation room for £1,100.

Metalwork rooms.—The total cost of equipping metalwork rooms need not exceed about £850. The principal items allowed for are two suitable lathes, a power drill, grinder and hacksaw and a forge and brazing hearth.

Woodwork rooms.—These rooms should generally be furnished and equipped for £400-£450. The principal items of equipment allowed for are a single wood-turning lathe and a power grindstone.

Housecraft rooms—It is the general practice to hire cookers and boilers for these rooms. Some authorities are able to hire refrigerators and washing machines and, in some cases, drying cabinets; others have to buy these. It is necessary to limit these latter items to domestic sizes and to a number sufficient to illustrate the principles involved. If they have to be purchased, the total cost of a housecraft room ought not to exceed £500. If all heavy equipment is on hire, then the total should not exceed £300. These figures include provision for the furnishing of a small "mock-up" training flat.

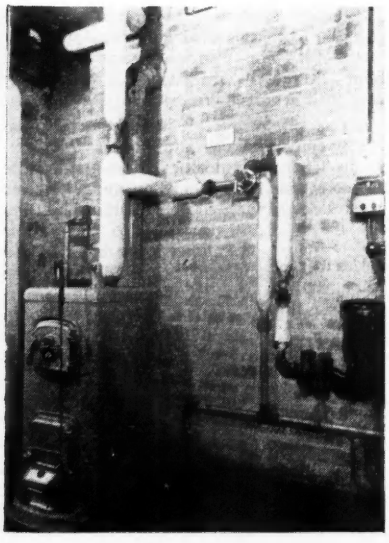
Expenditure on furniture and major equipment within the limits of costs now set or approved on the basis of lists submitted may be met from loan, as may also expenditure on the initial purchase of library books.

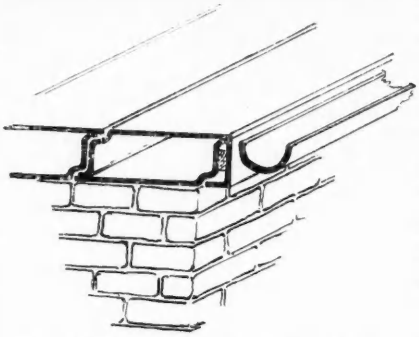
The Builder Review of PLANT & MATERIALS

New Colours

FOUR new colours have been introduced into the Murapaste washable oil-bound water paint range of Walter Carson and Sons, Ltd. Copies of the pattern card can be obtained from the firm at Grove Works, Lombard-road, SW11.

The all-enveloping cover of the 6-in. projection Fordham Panel Low Level Cistern has been redesigned. The centre fixing screw can be of a thief-proof type if required and the cistern is offered in a vitreous enamel finish to match any colour. The cistern, which is made by Fordham Pressings, Ltd., Melbourne Works, Dudley-road, Wolverhampton, is also marketed with fittings for foot operation.





The technical department of the Universal Asbestos Manufacturing Company Limited, Tolpits, Watford, Herts, has designed a new type finishing unit for hollow roof decking to form a neat verge, and for use against abutments, parapet walls, lantern lights and in all cases where projections extend through the decking. The product produces a neat finish and any break in the continuity of ceiling joints is avoided. The unit is useful where roofs have splayed ends. It is also unhanded so that it will match in with adjoining standard units whichever way the latter are laid.

A Foam Fire Fighter

An entirely new type of fire-fighting appliance, the Model A.F.300, by the Pyrene Co., Ltd., 9, Grosvenor-gardens, London, SW1, is entirely self-contained. It has a capacity of 30 gallons, which produces more than 400 gallons of mechanical foam for use against outbreaks involving oils, spirits, fats and other inflammable materials. It is trolley mounted and consists of a 30 gallon container and a CO_2 gas-cylinder, it weighs 670 lb. when charged, is 4 ft. 11 in. high and 2 ft. 7 in. wide. Total discharge is completed in two minutes.

Heavy Duty Rubber Tile

The "Surefoot" tile from Semtex, Ltd., Hastings House, 10, Norfolk-street, London, WC2, is for heavy traffic such as found in booking halls, loading bays, pithead baths and surrounds to swimming pools. The top surface of the tile is fluted to make it non-slip and the underside has dove-tail grooves for bedding in mortar. The tile is eighteen inches square, seven-sixteenths of an inch thick and coloured black. It is suitable, it is said, for laying on concrete or similar sub-floors fixed in sand and cement mortar.

Left: Use of embedded floor coils for heating domestic and commercial premises is rapidly increasing in this country. In order to maintain constant thermal conditions, and to guard against overheating, the system must incorporate an effective method of temperature control. A simple and efficient means of control is provided by the Leonard thermostatic mixing valve made by Walker, Crosweller and Co., Ltd. of Cheltenham, Gloucestershire. It is shown blending the hot supply from the boiler with the return from the floor heating coils, circulation being maintained by a small booster pump.

New Range of Tiles

A new range of "Vinylex" tiles has been built up from a 12-month survey of home and overseas markets by Semtex, 123, Pall Mall, SW1. The range is offered in 19 colours sized 9 in. by 9 in. in two thicknesses of one-eighth and one-tenth of an inch. Made from polyvinyl chloride resin, the tiles offer high resistance to wear and tear and to the effect of oil, grease, acidic materials and alkalis.

TRADE NEWS

Price Reduction

Philips Electrical Ltd., announce that the list price of their 8 ft. 125w. MCFA/U fluorescent lamp is reduced to 25s. from 32s. 6d. The lamp is available with bi-pins or BC caps in white, warm white, cool white (daylight) and cool white de luxe (natural).

Control of Company

Control of Wallington Weston and Co., Ltd., Frome, has passed to the Marley Tile Co., Ltd., who have acquired the whole of the capital. There is to be no major change in management or in the nature of the products but the range of the latter will be improved and expanded in both the plastic and synthetic rubber fields.

London Head Offices

Head offices built by themselves have been occupied by Sir Lindsay Parkinson and Company, Ltd., at 6, Lambeth-road, SE1. The architects for the building were Moiret and Wood, FRIBA, and the consulting engineers for reinforced concrete work were Malcolm Glover and Partners.

USA Air Force Baths

One thousand five hundred houses now being built in Britain for USA Air Force personnel are to be fitted with the latest bath produced by Allied Ironfounders, Ltd., 28, Brook-street, W1. This bath, known as the "Allied Vogue," has been chosen by the Americans as its design is shallower than normal and it has a flat base. Made of porcelain enamel, in white, standard colours or pink, the bath has a rectangular top, and a choice of three alternative tap fitting positions are available. It is made by the British Bath Co., Ltd.

Board Production

Over 400 miles of Stramit building and insulating slabs were despatched from the Stowmarket factory of Stramit Boards, Ltd., during the year ended March 31, 1956. These slabs were used on a wide range of buildings in this country, from atomic establishments to farm buildings. Stramit was exported to Ethiopia, Cyprus, Hong Kong, Burma, Rhodesia and other countries for use in the construction of technical colleges, offices and exhibitions.

Films on Bitumen

In a film which the Dussek Co., Empress Wharf, Sherman-street, E3, have produced and which was shown recently, it was seen how emulsification in the production of bitumen is now effected in comparison to old ways. In a second film the application of "Colade" was featured, notably with regard to the retread process for class-three roads which may be broken up through water washing out the fines.

Flexibility Through Standardisation

DEVELOPMENT OF THE NUMBER PATTERN FOR MODULAR CO-ORDINATION (BRS NOTE E 640*)

By E. D. EHRENKRANTZ, BArch (MIT), (Fullbrook Fellow in Architecture)

SUMMARY: The urgent need for the increased use of standard building components as a major way of reducing building costs due to cutting and fitting implies the adoption of a logical system of selection of their sizes. This paper discusses the criteria for such a selection, and briefly examines previous attempts at solutions before describing the development of a further method which is proposed for practical trial.

It is held that the use of such a number pattern method of selection invalidates the need for thinking in terms of a single basic module, and that this has distinct advantages for a complex industry where the range of existing sizes and degree of investment in plant based on these sizes is already great.

Stress is also placed on the need for a system in which there is a large degree of aesthetic freedom. Hence there is an examination of the different proportions available in this and other systems. (Editorial Comment is on page 719.)

Introduction

"IT is accepted in this country, as in others, that there are too many sizes of building products. The dimensions of these products, moreover, are not related in any simple way so that, despite their abundance, they give little flexibility of assembly or combination without resort to special sizes or site adjustment. There is an obvious need, therefore, for reduction of the number of sizes by some guided selection and for this reduced number to be related or co-ordinated in a rational manner."†

Such a range of sizes should be selected with the aim of satisfying the following conditions: (This list is not in order of significance and the relative importance will differ with different parts of the building industry.)

1. It should lead, as a matter of first importance, to lower costs.
2. It should be aesthetically neutral, allowing freedom in design. The importance of standardising a scale of sizes for products giving multiple use and not for closed systems must be a primary consideration. A standardised scale gives the designer sureness and confidence in his work because the properties of his palette are known and constant, while standardisation of end-products only provides a regimenting influence.‡
3. It should allow building materials to be used in a natural manner, taking into account the properties and limitations of the materials themselves and the manufacturing and handling processes involved. Many building materials have optimum dimensional sizes based both on their physical properties and their handling characteristics. These optimum sizes should be retained, as far as possible, so that no branch of the building industry is penalised unnecessarily.
4. It should include those proportional systems which may be useful tools to the designer. Aesthetic neutrality should include flexibility in proportional relationships.
5. It should be numerically simple and easy to operate.
6. It should, if possible, have application in both metric and foot-inch countries.
7. It should have maximum numerical adaptability and, in particular, the terms must be additive in many ways because building is an additive process.
8. It should take into account anthropometric data, efficient and economical structural sizes, and their relation to established planning sizes in different types of buildings.

Three Approaches to Modular Co-ordination

As many products are now made in factories, the necessity of re-working factory-made products by hand, when they are delivered to the site, is wasteful and should be avoided. Proper numerical co-ordination of building products should save both labour and material in building. In recent years many attempts have been made to find a usable approach; these attempts fit into three general categories. The industrial approach—Bemis; the proportional or aesthetic approach—Le Corbusier; and the mathematical approach—the Renard Series.

The Industrial Approach

Albert Farwell Bemis, an American industrialist, made the first attempt to apply a theory of modular co-ordination to construction problems. In 1936, his book, "The Evolving House," was published setting down, for the first time, an approach to standardisation in the building industry. Bemis's concept was, in principle, to accept as modular every dimension which was a whole multiple of a base module.

Two possible base modules were examined in detail, 3 in. and 4 in., each with its own spheres of influence. If a base module of 3 in. were to be used there would be 33 resting points between 0 and 100 in., and if a base module of 4 in. were used, there would be 25 resting points between 0 and 100 in. Limiting the numbers in this manner the Bemis approach, if used, would go some way towards clarification and standardisation of numbers.

The main axiom of Bemis's concept is that, if all building products were multiples of a base module, they would be readily commensurable. The axiom works only with smaller product sizes, however, and not with larger ones. While 4 by 12 in., 3 by 16 in., 2 by 24 in., 6 by 8 in. . . all equal 48 in., it would be difficult to use 28 in. or 44 in. with other sizes. It is almost impossible to use together two products sized 18 and 19, multiples of a base module. For example: using 4 in. as the base module a spandrel walling panel of size 76 in. (19 multiples) has to be used 18 times to mesh (to come together evenly) with a glazed panel of 72 in. In fact, these panels will mesh only once every 114 ft. Yet the difference in size between the two panels is one module, i.e., 4 in. To use different bricks of the same (18: 19) ratio together would be similarly difficult; it would be most inconvenient to use a facing brick of 9 in. with a common brick of 9½ in. The application of a base module alone may merely result in missing rather than meshing, though the missing will be by modular amounts. See Fig. 1 below.

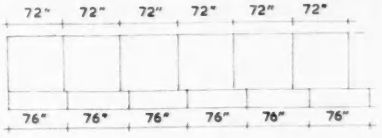


Fig. 1

A second difficulty is the necessity of choosing one base module. Bemis saw two possible answers workable for American timber housing, 3 in. and 4 in. Each of these two dimensions suited particular problems better than the other one. This resulted in Bemis presenting the arguments for each base module, but in not making a final choice. If one base is chosen to the exclusion of the other, certain materials or methods of construction would suffer in comparison. The lack of any provision for sub-divisions of the base module presents another difficulty. In reinforced concrete construction, a thickness range of 4 in., 8 in. and 12 in. would impose a severe limitation in design and economics. The same holds true for column sections as well. In-between sizes such as 6 in. would be desirable for these purposes but they do not fit into the systems in an easy manner.

In short, the Bemis approach to modular co-ordination has some advantages in cleaning up the dimensional ranges of products. But this particular approach will not meet the present-day conditions of the building industry, and must be regarded as only the first step in the development of

* Crown Copyright Reserved on behalf of the Building Research Station (DSIR). The paper was read to the Modular Society.

† This passage is taken from the unpublished report of the European Productivity Agency Report on Modular Co-ordination, United Kingdom, Section 4A.

‡ The musical keyboard offers an excellent analogy as it contains a range of keys each of a standardised frequency. The relationships of the various keys to each other are also determined. Together all the keys provide a scale from which an infinite number of musical compositions may be composed. The architectural scale should be based on a range of dimensional sizes.

a rational system which would apply to the present-day problems.

The Proportional and Aesthetic Approach

Consider next Le Corbusier's "Modulor" as an example of the aesthetic or proportional approach to modular co-ordination. This system contains no module in the ordinary sense of the word. It uses two sequences of dimensions which are arranged so that, in each series, each term is the sum of the two previous terms while at the same time each dimension is larger than its preceder by a constant ratio rather than a fixed dimension, the ratio being 1: 1.618 (the so-called Golden Mean). Geometric series having both the fixed ratio and the additive arrangement are called Fibonacci Series, attributed to the Italian monk, Filius Bonacci, who developed this series in the sixteenth century. In the "Modulor" Le Corbusier's two series, given in inches, are :

Red Series	*Blue Series*
1 in.	2 in.
1½ in.	3 in.
2½ in.	5 in.
4 in.	8 in.
6½ in.	13 in.
10½ in.	21 in.
17 in.	34 in.
27½ in.	55 in.
44½ in.	89 in.
72 in.¶	144 in.
116½ in.	233 in.

The blue series is twice that of the red series. Both series are additive in the Fibonacci manner, i.e., from the blue series: 5 + 8 = 13, 8 + 13 = 21 or 13 + 21 = 34, and so on. Also 13: 21, 21: 34, 34: 55, 55: 89 and 89: 144 all have the Golden Mean ratio of 1: 1.618. Because of the arithmetic and proportional properties of these two series, they may be used in certain unique ways. Fig. 2 below shows some of the combinations possible with these two series:

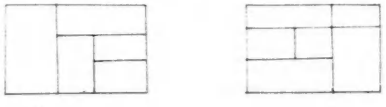


Fig. 2

Fig. 3 now shows how this family of proportions is usable, without make up or filler pieces, in an interlocking manner. The golden mean proportion is interlocking here as 233 : 144 = 144 : 89 = 89 : 55 all equal 1 : 1.618.

The Fibonacci Series have been and are, at present, being used as a tool in design. Le Corbusier tries to make a case for the use of these two series on anthropometric grounds, though there is no proof showing that these series alone are capable of guiding dimensions for human relationships in building. The arbitrary addition to the height of the average man of three inches so that 72 in. could be used for numerical simplicity in the red series

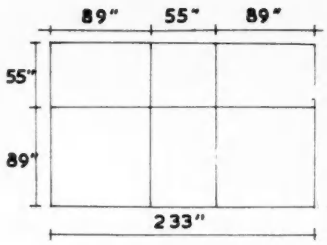


Fig. 3

instead of the correct figure, 69 in., appears to invalidate this approach.

"Le Modulor" has received much attention among architects, but it appears to have a number of faults which have prevented its usage on a wide scale. These appear to be :

1. It does not provide, beyond a very limited extent, for the properties of "addibility" generally needed in building. One cannot use three or four windows of 21 in., and find a related dimension for a lintol or a cill with the group of dimensions.

   The use of grid or bay sizes with simple multiples and divisions is equally impossible within the system. When one works from the red series to the blue series one may use two products of the same size together so that they give another size on the series, but this is the only way in which the products may be used easily in a repetitive manner. The type of addibility found in the Fibonacci Series seems best used in façade or vertical design where cill and window heights add to give wall heights in an A + B = C fashion, where A and B need not have any other relationship than their sum being equal to C. A wall height of 89 in. could thus be used with a cill height of 34 in. and a window height of 55 in.
2. It provides for only a very few of the architecturally important proportions, apart from the so-called golden ratio, for the two series contain only nine possible proportions between the limits of 1 : 1 and 1 : 4.§

   They are :—

   1 : 1
   1 : 1.236 or 72 : 89
   1 : 1.309 or 55 : 72
   1 : 1.618 or 8 : 13
   1 : 2
   1 : 2.118 or 34 : 72
   1 : 2.666 or 3 : 8
   1 : 3.242 or 72 : 233
   1 : 3.429 or 21 : 72

While this group of nine proportions gives a unique type of grouping for certain design purposes it does not include many different proportions which were found useful in the past and are still useful now. For a system to limit all building products to this small group of possible proportions is a fundamental disadvantage and a handicap to the designer.

The Mathematical Approach

The third category is mathematical and the Renard Series (which has been standardised internationally for certain engineering purposes) is the best example of this approach. Although this series has not proved acceptable for Modular Co-ordination, it has been considered at different times. The series is a doubling one, modified to work logarithmically. The Renard Series is compared below with a doubling series to show the modifications.

Renard Series

1 2 4 8 16 31.5 63 125 250 500 1,000

Doubling Series

1 2 4 8 16 32 64 128 256 512 1,024

The modifications are underlined and, although small, they are in the wrong direction. Two products of 16 units will not fit into an opening of 31.5 units, and this is the main reason why this series, although studied, has never been advocated for Modular Co-ordination.

The Two Dimensional Number Pattern

It seems clear that a system had to be devised which could carry the building industry at large and, at the same time, encompass the various requirements mentioned earlier—aesthetic neutrality, flexibility, natural use of materials, anthropometric data and simplicity. In order to start, one has to accept the limitation of working with *nominal* sizes. It is important to state here that for the rest of the paper the following condition applies—building products meet at all joints, fill all spaces with standard parts but do not join together. A corollary of this point is the use of minus tolerances for products which fit into given distances, e.g., a dimension of 7 ft. 11⅞ in. ± ⅛ in., or 8 ft. 0 in. − 0 in. − ¼ in. This principle is directly applicable to butt jointing or spline jointing, but even products which join together by lapping or some form of interlocking must be related to the principle, even though they cannot, by their nature, keep wholly within the allotted modular space.

In order to see how products are related to each other one must study their dimensions. These dimensions may then be studied in terms of numbers, and this is essential if the above mentioned requirements are to be fulfilled. After much experiment with many different sequences of numbers, three series of numbers were found having favourable characteristics enabling them to be used collectively as a guide for the solution of this problem. These three guide series of numbers are:

1. The doubling series—1, 2, 4, 8, 16 . . .
2. The tripling series—1, 3, 9, 27 . . .
3. The Fibonacci or additive series—1, 2, 3, 5, 8, 13 . . .

Each of these series has certain properties which make their inclusion necessary in an overall pattern for modular co-ordination. The three series are discussed in detail in Appendix I.

These three "guides" should be combined in such a way that their positive qualities remain and their individual weaknesses disappear. Tables 1 and 2 show the three series combined in what is believed to be the best possible arrangement. The Fibonacci series is drawn vertically in the centre of Table 1. The doubling series expands to the right and

¶ This size was chosen to obtain rounded dimensions. "The values of the 'Modulor' in its present form are determined by the body of a man 1.75 m. (68.79 in.) in height. But isn't that a rather French height ? Have you never noticed that in English detective novels the good-looking men, such as policemen, are always 6 ft. tall ?" The Modulor by Le Corbusier, page 56.

§ The 1 : 4 limit to this range has been arbitrarily set as a point for comparison to be used in this paper. It seems logical in that we are considering building material products and, except for structural units, very few products exceed this proportion.

the tripling series to the left. The number 1 is common to all three series. The remaining numbers are then filled in in Table 2.

TABLE 1

Tripling			Fib.	Doubling		
—	9	3	1	2	4	8
			2			
			3			
			5			
			8			

TABLE 2

Tripling			Fib.	Doubling			
—	9	3	1	2	4	8	—
—	18	6	2	4	8	16	—
—	27	9	3	6	12	24	—
—	45	15	5	10	20	40	—
—	72	24	8	16	32	64	—
—	—	—	—	—	—	—	—

This group of numbers gives many advantages which should be noted at this point. It seems to have certain properties which may be useful to architects and manufacturers. These are:

1. The three ways in which numbers are commonly used in building are included within this table.

   (*a*) The numbers may be divided into numerous smaller equal sizes : 16=4 4's, 2 8's, 12=2 6's, 4 3's, 3 4's, 20=2 10's, 4 5's, 5 4's, etc.

   This property applies particularly to grid planning.

   (*b*) They may be divided into smaller unequal sizes 8=3+5, 15=9+6, 20=8+12, etc. This property applies especially to façade design.

   (*c*) They may also be divided into combinations of very small and larger sizes to equal still larger sizes, thus: 8+1=9, 9+1=10, 15+1=16, 16+2=18, 15+3=18, etc. This property is useful for in-filling panel constructions where the panel length + the column thickness = the structural length.

2. A wide range of proportions is available within this framework. These will be discussed in detail later.

3. The numbers on the right-hand side of the table increase in a regular progression (Table 3). The increase in interval is 1 for the first six numbers on the pattern, 2 for the next 4, 4 for the next 4, 8 for the next 4, and so on.

   The numbers generated from the tripling series, on the left-hand side of Table 2 fall between the above intervals thus giving the A+B=C properties of the pattern. The increase in spacing between the intervals, as the numbers become larger, is most important for limiting the numbers of possible product sizes.

4. The numbers chosen by this method exclude all the prime numbers and their multiples above five. This exclusion is desirable as prime numbers are non-factorable odd numbers. Their exclusion helps to retain maximum flexibility within the selected range of numbers. Using this group of related numbers, the selection of sizes may be guided in such a way that products used together will be easily combinable.

5. The manufacturer may find certain advantages within this system. A raw material of any one of the sizes on the right-hand side of the pattern may be cut to any of the smaller sizes in Table 2, yet the remainder is a standard modular size. For example, if a manufacturer stocked his raw material at a size of 64 units and products of 20 units were ordered, the 64 could be divided into a 40 and a 24, see Table 2. The 40, in turn, would be divided into two 20's and the remaining 24 is a standard modular size. This interlocking of the various sizes can probably help to reduce waste in manufacturing processes and on the building site.

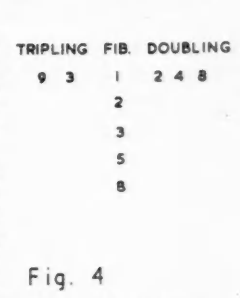
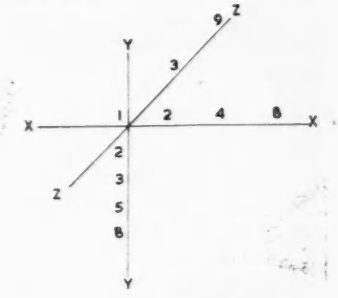


Fig. 4

Although this particular grouping of numbers appears to have many advantages there are seemingly still some disadvantages and room for improvement.

The first weakness of this two-dimensional table is that only the vertical column under the 1 can be both doubled and tripled (Table 2). If we look under the vertical column headed by 2 we find that we cannot triple 10 or, looking under 3, we cannot double 15. As both doubling and tripling are basic for the table's flexibility, the fact that only the vertical column headed by the number 1 can be both doubled and tripled seems to be a weakness because it does not provide all the numbers possible by the operation of the underlying principles. Fortunately, this may be remedied.

The second disadvantage is that this table presumes a single dimension for the number 1. This would be a base module and, once chosen, all the other terms in the table will be multiples of this base module. This type of solution, which is the conventional outlook, seems to over-simplify existing conditions in the building industry. It may be possible to determine a single base module for a particular group of products, but to try to do so for the entire industry at this stage can and ought to be questioned. For the present, it would seem impossible to disregard the solid clay brick, which has an optimum nominal size of 3 in. by 4½ in. by 9 in. For reinforced concrete construction, 1½ in. intervals are specified in a recent British Standard. If one tried to use a base module of 4 in., column sections could be 4 in. by 4 in., 4 in. by 8 in., 4 in. by 12 in., 8 in. by 8 in. and 8 in. by 12 in. or 16, 32, 48, 64, or 94 sq. inches. This range of sizes does not give enough engineering flexibility and one does not have to be an engineer to know that more intervals are needed in this dimensional range.



The Three Dimensional Number Pattern

The next step in the development of the number pattern is believed to be the most important one. To complete the system one must work in the third dimension. This gives an added direction for meshing, increasing the possibilities of numerical combination which seems to be a highly desirable quality if one wishes to achieve flexibility and standardisation at the same time.

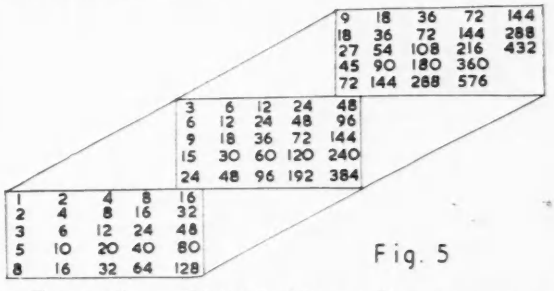


Fig. 5

The basis of the two dimensional pattern (Table 1) was changed as shown in Fig. 4 to provide the necessary framework for a three-dimensional pattern.

This change overcomes the first weakness of the two-dimensional table. By using the three series in the X, Y and Z axes the doubling and Fibonacci series remain as before, but the tripling series goes back into the paper. Now all the numbers may be both doubled and tripled, as can be seen in Fig. 5, with the numbers filled in on the three-dimensional framework.

Upon close examination, one finds that the stock of whole *numbers* in the three-dimensional pattern is much the same as it was in the two-dimensional table, the additions being the cross products 30, 36, 60, 90, and so on. If we were to consider the numbers in the pattern as direct inch dimensions, it would be possible to overcome the second weakness mentioned

TABLE 3

Increase in Interval	1						2				4				8	
Numbers in pattern	1	2	3	4	5	6	8	10	12	16	20	24	32	40	48	
Terms in each range of increasing intervals	6						4			4			4			

above—the difficulty of using one base module. Products could then be used on a 3 in., 4 in., 5 in. or 9 in. base, as well as many other possible base dimensions, and yet all the numbers are related to each other. This throws the emphasis on co-ordination which is the purpose of modular co-ordination. These relationships may best be seen by setting out the dimensions on transparent plastic sheets. See photograph (Fig. 6) below :

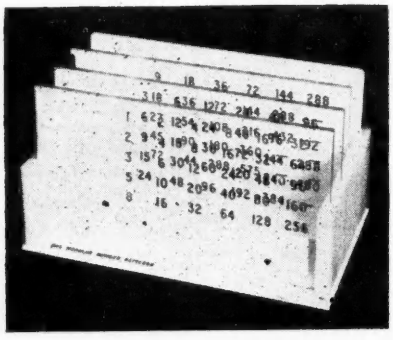


Fig. 6.

As the numbers are doubled and halved in the X axis it is possible to halve the numbers further if these subdivisions are needed, still working within the rationale of the pattern : 1 in. will become ½ in., 3 in. will become 1½ in., 9 in. will become 4½ in., and so on. The 4½-in. dimension enables the pattern to incorporate the standard brick and relate it to the other sizes.

TABLE 4

Foot Intervals	All numbers above 1, excluding fractions	Common to 3 in. 4 in. and 4½ in.	3 in. only	Common to 3 in. and 4 in.	4 in. only
ft.	ins.				
12	144	144		144	
11	135		135 (67½)		
	128				128
10	120			120	
9	108	108		108	
8	96			96	
7	90		90		
	81		81 (40½)		
	80				80
6	72	72		72	
	64				64
5	60			60	
	54		54		
4	48			48	
	45		45 (22½)		
	40				40
3	36	36		36	
	32				
	30		30		
	27		27 (13½)		
2	24			24	
	20				20
	18		18		
	16				16
	15		15		
1	12			12	
	9		9 (4½)		
	8				8
	6		6		
	4				4
	3		3		
	2				
	1				
0					

TABLE 5

(feet)	0	1	2	3	4	5	6	7	8	9	10	11	12	13
(Number of dimensions	7	5	4	3	2	2	3	1	1	1	2	1	1	

The number solid now contains all the dimensons above 5 which are not prime numbers or multiples of prime numbers. Therefore, the first dimension excluded is 7 in., 11 in. is the next, and 13 in. follows. The Fibonacci Series was stopped at 8, because 13 would have been the next number. The use of 13 as a guide for product sizes would reduce the overall flexibility of the system because it has no common factors with the other numbers of the pattern. The number 13, however, might still be used as a planning dimension, if wanted, by using two product sizes of 5 and 8.

The dimensions contained within the pattern may be shown in a table of increasing size to give a clearer picture of the dimensions themselves. Table 4 shows the dimensions and their relation to the three sizes which have often been considered as the best possibilities for choice as a base module : 3 in., 4 in. and 4½ in.; 5 in. and 10 in. are omitted from main list of dimensions, not being multiples of 3 in. or 4 in., or 4½ in. The 4½ in. sizes, which are shown in brackets in the 3-in. column, have been included to give certain brickwork dimensions which may prove important.

In all, there are 33 dimensions from 0 in. to 12 ft. 0 in. Table 5 above gives the breakdown of the number of dimensions per foot.

Of the 33 dimensions, 12 are below 2 ft., where they give reasonable flexibility for masonry sizes, wall thicknesses, acoustic tiles, etc. Between 2 ft. and 12 ft. there are 21 dimensions which would be the stock available for wall panels, windows, doors, roofing slabs, and so on. This seems to be reasonable for consideration at this stage of development. Any dimensions not needed may be ignored and if any not included are later proved to be important the flexibility of the pattern should make their usage possible.

The relations within the three-dimensional pattern have not been discussed yet, but are of much interest. For this purpose the first three plates as shown in Fig. 5 are numbered and lettered for reference in Fig. 7 below :

1. In order to halve, one moves to the left. (Plate 3, column B—90 = 2 45's.)
2. In order to third, one moves forward. (Using 90 again, move forward to Plate 2, column B : 90 = 3 30's.)
3. In order to add two unequal dimensions (in Plate 3, column B use the two dimensions above 90, 36 + 54 = 90.)
4. 90, which was equal to three 30's is also equal to 30 + 60.
(60 Plate 2, column C, is equal to 2 30's when one moves to the left.)
5. 60 is also equal to 4 15's as one moves two intervals to the left, Plate 2, column A.
6. In Plate 3, column A, 45 = 3 15's so 60 = 15 + 45, and 90, which was equal to 30 + 60 is, therefore, equal to 15 + 30 + 45.
7. 45 (in Plate 3, column A) is equal to the two numbers immediately above it; 27 and 18.

This breakdown of the numbers may continue *ad lib.* 27 = 3 9's, 18 = 3 6's, 60 = 36 + 24, 24 = 2 12's, 3 8's, 16 + 8, and so on.

As one can see from the above examples, the pattern helps to co-ordinate materials which may be made up from different base modules, and therefore normally considered incommensurable. More directly, if one wishes to use a multiple or multiples of 3 in. with those of 4 in., one can move to the right of the X axis from 3 in., and backwards on the Y axis from 4 in. They intersect at 12 (Plate 2, column C), and all the numbers below, to the right, or behind 12 are multiples of both 3 in. and 4 in., i.e., foot intervals. Multiples of other base dimensions may be related in a like manner.

The ability of the three dimensional Number Pattern to relate products of different base dimensions, allows products to be used in their most efficient form or size, and this may prove to be essential. This appears to answer the requirements for the use of optimum sizes of building materials wherever possible. A corollary of this property of easy " rebatability " is the placing of given building products into given room sizes using only standard products. The room size and the product need not have a direct relationship.

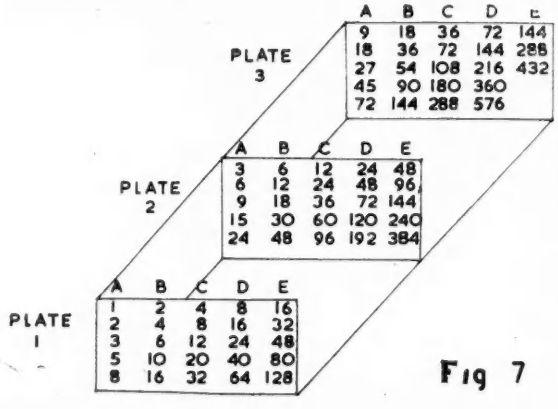


Fig 7

As an example, let us try to place a 3 ft. door into a 20-ft. classroom. 240 in. (Plate 2, column E) is equal to 2 120's (Plate 2, column D). 120 is equal to 2 60's (Plate 2, column C), and each 60, adding in column C, is equal to a 36 and a 24. 240 is also equal in column E to 144 and 96. In column D, the 144 is equal to 2 72's, and each 72 in turn

is equal to 2 36's, which is the door size we started to fit in, and in Plate 2, column C, the 96 is equal to 60 + 36. Also 240 is equal to (¼ of 240) 60 Plate 2, column C) and (¾ of 240) 180 (Plate 3, column C). The 60 again is equal to 36 + 24 and the 180 may be subdivided at will.

With the aid of the Number Pattern a designer can quickly find all the possible ways of using given standard size products to fit a given wall opening. This property of the pattern would enable the designer to choose from many possibilities ; at present, one is often so surprised when a workable answer is found that it is used at once. With the pattern the final choice may be made for aesthetic reasons and not by chance arithmetic.

The Number Pattern and Product Sizes

The use of a framework of related nominal dimensions in the fixing of product sizes is one of the vital bridges between theory and practice in this field. The studies necessary to show how best to do this in the different circumstances of various kinds of products are actively in hand. Some aspects already seem fairly clear, but others have not yet been examined. In the circumstances it seems best not to attempt what must be a partial discussion here, but to look forward to an adequate review in a separate paper.

Systems of Proportion

Different systems of proportioning have recurred in architectural history as design aids. Before the advent of mass production methods, most products were specials and a designer could call for any size or proportion. It was, therefore, comparatively easy for the designer to use proportions as a factor in design. In order to use the tools of proportional design in a technical society both the ratio and the dimension must usually be fixed. Of the three approaches to Modular Co-ordination mentioned at the beginning of the paper, only Le Corbusier's approach incorporated a proportional idea.

The Number Pattern appears to include the main systems of proportion which have been used as designers' aids in the past. Unfortunately, too much mythology has been written about proportions and this has brought discredit on an important aspect of design. Two major systems of proportions will be discussed here to show that the Number Pattern, because of its aesthetic neutrality, can allow for proportional approaches to design.

The Number Pattern incorporates the following 32 proportions, between the limit of 1: 1 and 1: 4.

TABLE 6
LIST OF 32 PROPORTIONS

1— 1	4— 9	9—10
1— 2	4—15	9—16
1— 3	5— 6	9—20
1— 4	5— 8	9—32
2— 3	5— 9	10—27
2— 5	5—12	15—16
3— 4	5—16	15—32
3— 5	5—18	16—27
3— 8	8— 9	20—27
8—10	8—15	27—32
4— 5	8—27	

The group contains proportions which can be divided into two groups, one being based on the " Golden " section, derived from the Fibonacci series, and the other being the family inherent in the combined doubling and tripling series.

It will be recalled, from the discussion of Modulor, that the Fibonacci series has two properties of particular interest for us—its peculiar additive and interlocking characteristic, and its indirect relation to anthropometric dimensions. The Modulor has two such series, and the Number Pattern has many. In the Number Pattern as set out here the series are not carried beyond five terms, but it is interesting to see nevertheless that the dimensions of Modulor are closely paralleled by sizes from the pattern if a group are selected which are multiples of 4½ in. Table 7 shows the comparison.

TABLE 7

Red Series		Blue Series	
Le Corbusier	4½ in.	Le Corbusier	4½ in.
4		8	9
6½	9	13	13½
10½		21	22½
17	18	34	36*
27½	27	55	54
44½	45	89	90
72	72	144	144
116½	117	233	234

* The blue series from the Number Pattern is made up of two Fibonacci series 9, 13½, 22½, 36, 58½ and 18, 36, 54, 90, 144 . . . joined at 36.

The similarity of the dimensions suggests that they have an equal validity as an aid in proportional design. But there is this important difference in the dimensions from the Number Pattern that their practical usefulness is greatly increased by having a common multiple and additional multiples in the pattern. It is true, of course, that the exact proportion of 1: 1.618 is not found directly in the pattern, because it is only approximated in the lower terms of the series, 5: 8 being the closest at 1: 1.600—a divergence of 1.11 per cent. But buildings are never seen in true elevation and in two dimensions only, nor can proportions be judged exactly, even under ideal conditions, and this departure from an exact ratio is of no practical consequence. Some simple tests conducted at the Building Research Station showed this to be so, and that in fact variations up to 6 or 7 per cent were not easily recognised.

The second important system of proportion depends on the doubling and tripling series. The combination of these two is known historically as the Platonic Lambda. Unfortunately, its mythology is as well or better known than its useful properties.

The proportions obtained from the numbers of these two series are simple whole ratios, and are readily commensurable. They have been found important in musical proportioning as well as in architectural and artistic composition. Some of the proportions may be compared directly with musical relationships: 1: 2 is an octave, 2: 3 is a 5th, 3: 4 is a 4th and 8: 9 is a tone.

Professor Rudolph Wittkower, in his book " Architectural Principles in the Age of Humanism " devotes considerable space to the way in which these two series were used in the past. Documents and drawings exist which show that architects like Alberti and Palladio, artists of Titian's calibre and many great men from the time of Vitruvius to the present, have made use of them. Fortunately for the Number Pattern, these two series of numbers which give it its vital flexibility and factorability also give it its capacity to provide for proportional design in the sense which history has shown to be persistently important.

Possibly, also, we can learn new freedoms within our disciplines, as music has done so markedly during the past 60 or 70 years. Rhythm in design to-day is frequently little more than simple repetition, such for instance as in making up a size represented by 48 from two 24's, three 16's or four 12's; but in the light of the Number Pattern, it somehow becomes easier to see that other rhythmic patterns are freely available within the discipline, for example, 30 + 18, 16 + 32, 12 + 16 + 20, 12 + 18 + 18, and so on.

The prospect is important. Successful composition implies orderly relationships. A known basis of order has always been important for any kind of composition in which fixed factors are used. In music, wave lengths are classified and the units combined in a related and understood manner, and musical variety would not be so extensive, nor composition so powerful without a flexible basis of order. Much the same is true of architecture and building. What is proposed here is a basis of order providing for the sizes of components and a related, flexible framework within which to plan and design buildings.

This paper is published by permission of the Director of Building Research. The author wishes to thank the Director for use of the facilities of the Building Research Station. His thanks are also due to Mr. William Allen, Head of the Architect's Division of the Building Research Station, and to his many colleagues for their helpful comment and criticism.

Appendix I

Discussion of the three series used to develop the two dimensional Number Pattern.

The first of these series, the doubling series, has the following favourable characteristics :

1. Flexibility with few parts. (With the first six numbers, 1, 2, 4, 8, 16 and 32 we can achieve flexibility to any interval up to 63, using each number only once. We have 1, 2, 1 + 2 = 3, 4, 4 + 1 = 5, 4 + 2 = 6, 4 + 2 + 1 = 7, 8, 8 + 1 = 9, 8 + 2 = 10, and so on. Although numbers 1 and 2 added together many times may also achieve any interval, the doubling series supplies a factor of scale, many building products being necessarily much larger than any size represented by the numbers 1 and 2.)
2. Due to the geometric nature of the series, there are more intervals in the lower ranges of numbers and fewer intervals in the higher ranges. This seems advantageous because the inclusion of 4 in., 8 in. and 12 in., in a system would appear more important than the inclusion of 68 in., 72 in. and 76 in., for example.
3. The ready factorability and addibility of this series make it particularly useful for the dimensional needs of co-ordination.

The doubling series, although it has the right kind of characteristics cannot solve the

problem by itself, because while it offers flexibility through addition of parts, it does not offer a reasonable amount of flexibility when used as a guide for product design. If one uses this series alone, one can have products with a height to width ratio of only three proportions within the limits of 1 : 1 and 1 : 4. They are : 1 : 1, 1 : 2 and 1 : 4. The simple door ratio of somewhere between 1 : 2.5 and 1 : 3, for example, does not occur. Obviously greater flexibility for product proportions is needed. One wishes to consider a door ratio as say, 1 : 3, and not as two rectangles of ratios 1 : 2 and 1 : 1 linked together.

The second series, the tripling series, running 1, 3, 9, 27, etc., has the following favourable characteristics :

1. The same properties of interval spacing found in the doubling series, i.e., more in the lower ranges, fewer in the higher ranges.
2. Ready factorability, as with the doubling series, which is very useful for grid or bay planning.
3. The factorability of the two series provides for the division of large dimensions into smaller equal dimensions. The differences between the two provides a guide to A + B + C thinking where, for example, a column thickness + a panel length = the structural size. The offsetting of these two series allows for this type of relationship, for example, 8 + 1 = 9. This may prove a vital requirement.
4. The tripling series along with the doubling series usefully increases the number of possible proportions for product design very much, as shown by the following range :

   1 : 1, 1 : 2, 1 : 3, 1 : 4, 2 : 3, 3 : 4, 3 : 8, 4 : 9, 8 : 9, 8 : 27, 9 : 16, 16 : 27 and 27 : 32.

The combination of the two series thus adds to the designer's freedom. Factorability, combinability, and the choice of proportions are improved and increased. However, some weaknesses remain. Although we can divide large sizes into smaller sizes (12 = 2 6's, 3 4's, 4 3's) and large sizes into slightly smaller sizes and very small sizes (9 = 8 + 1), we cannot divide large sizes into unequal smaller sizes as we often need to do. For example, 8 = 3 + 5. One can imagine a relation of this kind often being useful in relating, say, cill height and window height to match a storey height. The " A + B thinking " is very limited in its range of possibilities using just the doubling and tripling series, and certain important proportions are missing which should be included to make the pattern measure up to the requirement of aesthetic neutrality.

The third series—the Fibonacci—has the following favourable characteristics :

1. It provides a guide for the division of large numbers into smaller unequal numbers 8 = 3 + 5, in a form of addibility which is likely to be most important.
2. It adds new proportions to the ones obtainable with the doubling and tripling series, including certain important ones such as the golden mean, as Le Corbusier observed.
3. It also has more terms at the lower ranges and fewer in the higher ranges.

Grant for School Block

The Industrial Fund for the Advancement of Scientific Education, set up by a number of industrialists, has granted Warwick School, Coventry, £27,000. The grant is to be used for a new science block at the school which is to cost a total of £42,000.

Smokeless Zone Estate

A site at Russells Hall, Dudley, is to be developed by the Borough Council as a smokeless zone estate of 2,000 council houses. The site is ready for building after extensive levelling and grading.

LMBA

NFBTE Summer Meeting

The LMBA are Hosts

SOME 800 members of the Regional Federations outside London and their friends are attending the National Federation Summer Meeting, which, at the invitation of the LMBA, is being held this year in London in recognition of the fact that the President, Mr. Nigel Hannen, is a London man. He was President of the LMBA in 1949. London members and their ladies attending will bring the total up to well over a thousand.

The National Federation half-yearly meeting is being held in the Royal Festival Hall on Tuesday, July 10, and on the day before and the day after cricket and golf matches, river trips, and visits to places of interest in old and new London have been arranged. A reception is being given in Guildhall, which the Lord Mayor, with the Lady Mayoress, has promised to attend, and on the final day the LMBA is giving a dinner—over which Mr. K. C. F. Foster, President, will preside—to the delegates in Grosvenor House, at which the Bishop of London is to be the guest of honour.

A Cricket Win

THE LMBA Cricket Club won the first match of its season, when, at Kidbrooke, it beat the LCC Architect's Department by six wickets. The LCC won the toss, and batting first declared at 227 for three wickets. C. A. Boxall hit a very good century, though he gave a few unaccepted chances. The LMBA were left with two and a half hours in which to make 228 runs. They managed it with 15 minutes to spare, J. W. Stokes making 63 not out, and J. Webb 90.

MULBERRY HARBOUR MODEL

An Arromanches Exhibition

A SERIES of scale models of Mulberry Harbour was unveiled on June 6 at the Arromanches memorial museum situated on the sea front above the Normandy beaches where the British forces landed on their invasion of the Continent 12 years ago. Mulberry was the name of the two prefabricated transportable harbours—each the size of Dover—which were built largely by British civil engineering contractors and constructional steelwork firms and towed under escort across a hundred miles of English Channel to the Normandy coast to provide a system of off-shore piers to land ten thousand tons of supplies a day on the shallow beaches. It has been recognised as a feat matching the scale of the invasion itself.

The display at the Arromanches Museum consists of five models demonstrating the principal units and features of Mulberry Harbour. It occupies an area of 76 ft. by 10 ft. and took skilled craftsmen three and a half years, working more than 18,000 man hours, to complete. Finance for the models of Mulberry Harbour was provided by the Arromanches Museum Committee and a British contribution was sponsored by the British Constructional Steelwork Association and the Federation of Civil Engineering Contractors.

EASTERN FEDERATION

President's Review for Half-year

AT the half-yearly general meeting of the Eastern Federation of Building Trades Employers, held at Norwich on June 12, the president, Mr. R. G. Carter, MM, JP, FIOB, presented his review for the half-year. The following are extracts from the president's review:

Economic Prospects.—Successive announcements by the Chancellor of the Exchequer since last autumn have caused us to anticipate a fall in the level of building work. So far no noticeable overall reduction has materialised although in several parts of the Eastern Counties there are signs of a falling off in demand. At the moment the position generally appears to be that most builders cannot see a regular flow of work as far ahead as they could some 12 months ago.

On smaller maintenance and jobbing work, particularly painting and decorating, customers are less numerous but this seems to be due more to the high cost of labour than a tightening in credit facilities.

Labour.—Two wage increases in the last three months have caused us to ask again, and this time with more insistence, whether we can ever escape from this incessant round of annual advances. Year by year wages rates keep going up and there seems to be nothing at the moment which is likely to arrest this trend. Certainly we cannot expect collective action by the employing side of industry through the British Employers Confederation. We ourselves are faced with the problem that even if we stand firm on wage demands as members insist, what we do not concede in negotiation, is wrested from us through arbitration.

The Government has refrained from any action in this field and there would appear to be no justification whatsoever for the hope the Government expressed early in the year that after this present round of increases we may enter upon a period of restraint and greater stability. Regretfully one must conclude that the only solution lies in harsher economic conditions of a kind which, by reason of their repercussions, all sections of the community must find unwelcome.

Training.—Experience has shown that increased remuneration makes no difference to output and in our search for higher productivity and lower prices we have been concentrating more and more on training for management.

A report on our training programme will be specially issued later in the year but two points are worthy of comment at the moment. The first is the pioneer nature of the work we are doing and the second is the excellent response by members to the lead which the Federation has given.

The enthusiastic support for our programme this year has given us confidence in planning even more ambitiously for next year. We consider it to be a function of the Federation to take a lead in these matters and provide for member firms those facilities which they are unable to provide individually for themselves.

The Builder

CURRENT PRICES OF MATERIALS

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intention that the details given should indicate fair average prices of materials, not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchant's warehouse will necessarily be higher so as to include the stocking and handling costs involved. Due to the exceptional circumstances now prevailing it is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	6	0
Pit Sand	,,	1	3	5
Washed Sand	,,	1	6	7
¼ in. Shingle	,,	1	2	11
¼ in. Broken Brick	,,	1	0	6
Pan Breeze	,,		10	9
Fine or Coarse Foamed Slag Aggregate	per ton	3	0	9

2 yds. of fine and 2.6 yds. of coarse per ton.

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

		£	s.	d.
Best British Portland Cement. Standard Specification delivered Charing Cross area.				
6-ton loads and upwards, site	per ton	5	1	6
1 to 6 tons, site	,,	5	13	6
Rapid Hardening Cement in 6-ton loads and upwards to site	,,	5	12	0
1 to 6 tons do. site	,,	6	4	0
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices.				
Red, Buff or Khaki Colorcrete in 6-ton lots ...	,,	7	18	0
Other colours according to colour.				
In 4-ton lots from 295s. 0d. to 685s. 0d. per ton.				
White Portland Cement	,,	13	2	0
Under 1 ton	per cwt.		15	7
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	6	14	0
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £11 5s. 0d. to £14 0s. 0d. (1-ton loads and upwards).				
Lightning and Ciment Fondu Brands High Aluminous cement, 6-ton lots and up	,,	14	8	3
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	,,	6	12	9
Moler Mortar Powder for Flue Bricks (London sites)	per cwt.	1	10	0

BRICKS

		£	s.	d.
Full Loads.				
First Hard Stocks	per 1,000	11	17	0
Second Hard Stocks	,,	10	16	0
Mild Stocks (Kiln Burnt)	,,	9	1	6
Mild Stocks	,,	8	16	6
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½ in. Nominal Fletton Bricks to sites in W.C. District Commons	,,	5	13	0
Cellular do.	,,	5	13	0
Keyed do.	,,	5	15	0
Rustics	,,	6	18	0
Cellular Rustics	,,	6	18	0
Single Bullnose Commons	,,	6	13	0
Sandfaced	,,	7	13	0
Tuscans	,,	8	8	0
Saxons	,,	8	16	0
Golden Buffs	,,	9	3	0
Best Blue Pressed Staffs (London Stations) ...	,,	27	5	6
Do. Bullnose (London Stations)	,,	27	19	6
Blue Wire Cuts (London Stations)	,,	23	14	0
Midhurst Lime Bricks (London sites)	,,	10	8	0
Uxbridge Whites (London sites)	,,	9	17	0
Special Purpose Sandlime Bricks (London sites) ...	,,	7	14	0
2½ in. Best Stourbridge Fire Bricks (London stations)	,,	27	16	3
3 in. do. (London stations)	,,	33	8	0
2½ in. Moler Flue Bricks (London sites)	,,	36	0	0
2½ in. Machine-made Sandfaced Red Facings (London sites)	,,	14	8	6
2½ in. Machine-made Multi Red Facings (London sites)	,,	14	13	6
2½ in. Hand-made Sandfaced Red Facings (London sites)	,,	15	6	0
2½ in. Hand-made Sandfaced Multi-Colour Facings (London sites)	,,	16	1	0
Hand-made Sandfaced Cherry Red Facings. Berkshire district (London sites)	per 1,000	17	11	3
Hand-made Sandfaced Multi-Colour Facings. Berkshire district (London sites)	,,	17	6	3
Rubber Bricks for gauged arches (London sites) ...	,,	41	10	0
2⅜ in. Surrey Clamp Burnt Multi Stock Facings (London sites)	,,	13	6	0
2⅜ in. Surrey Kiln Burnt Multi Stock Facings (London sites)	,,	14	18	0
Glazed Bricks (London sites), White, Ivory, Brown—				
Stretchers	,,	64	0	0
Headers	,,	63	0	0
Quoins, Bullnose and 4½ in. Flats	,,	80	0	0
Double Stretchers	,,	85	0	0
Double Headers	,,	77	10	0
One side and two ends	,,	87	0	0
Two sides and one end	,,	89	10	0
Splays and Squints	,,	83	0	0

Cream and Buff £3 extra over White. Other colours, hard glaze, £8 10s. 0d. extra over White. All above prices plus 25% for Best quality and plus 25% less 10% for Second quality.

PARTITION SLABS, etc.

Delivered Central London Area. (W.C. District).

	Minimum lorry loads.			
Hollow Clay Partition Blocks (Keyed)				
*2 in.	140 yds.	per yd. sup.	4	4
*2½ in.	140 yds.	,,	4	7
*3 in. (3 cavity) ...	120 yds.	,,	5	4
Building Blocks (Keyed)				
*3 in. (6 cavity) ...	110 yds.	,,	5	6
*4 in. (6 cavity) ...	95 yds.	,,	6	9
6 in. (8½ in. × 5⅝ in.)...	1,250 blocks	per 1,000	26	6	0

* Half blocks at no extra charge.

Clinker Concrete				
2 in.	100 yds.	per yd. sup	3	9
2½ in.	85 yds.	,,	4	4
3 in.	75 yds.	,,	5	3
4 in.	55 yds.	,,	6	5
Cranham				
2 in.	... ...	,,	6	8
2½ in.	... ...	,,	7	4
3 in.	... ...	,,	8	7
4 in.	... ...	,,	10	7
4½ in. Load bearing quality ...	... ...	,,	11	8
Moler Partition Blocks				
2 in.	150 yds.	,,	15	6
2½ in.	120 yds.	,,	15	9
3 in.	100 yds.	,,	16	0
4 in.	90 yds.	,,	19	0
Lightweight Concrete Building and Partition Blocks of Various Sources of Manufacture				
2 in.	100 yds.	,,	5	9
2½ in.	80 yds.	,,	6	11
3 in.	65 yds.	,,	8	1
4 in.	50 yds.	,,	9	6
4½ in.	44 yds.	,,	10	2
6 in.	33 yds.	,,	13	8
Thermalite-Ytong Partition Blocks				
2½ in.	120 yds.	,,	6	11
Thermalite-Ytong Loadbearing Insulating Blocks				
3 in.	100 yds.	,,	8	3½
4 in.	75 yds.	,,	10	9
5 in.	60 yds.	,,	13	5
6 in.	50 yds.	,,	16	1½
8½ in.	35 yds.	,,	1	3	0½
Floor Blocks and Filler Tiles				
3 in. Floor Blocks 12 in. by 12 in. delivered in full lorry-loads		per 1,000	33	6	0
4 in. do.		,,	35	14	0
5 in. do.		,,	42	10	0
6 in. do.		,,	47	17	0
7 in. do.		,,	58	8	0
8 in. do.		,,	68	9	0
10″ × 3″ × 7/8″ Filler Tiles in multiples of 10 tiles		per 1,000 multiples	56	15	0
12″ × 3″ × 7/8″ do.	do.	,,	64	10	0
10″ × 4″ × 7/8″ do.	do.	,,	71	0	0

STONEWARE DRAIN PIPES, etc.

The following are the percentages to be added to the Standard List prices delivered London Area.

Delivered ex Merchants Wharf or Depot or Manufacturers Works.

	Over 2 tons	Over 100 pieces Under 2 tons	Under 100 pieces Under 2 tons
Best Quality ...	+85%	+117½%	+130%
BSS Best do. ...	+10% +85%	+10% +117½%	+10% +130%
Tested Quality	+37½% +85%	+37½% +117½%	+37½% +130%
BSS Tested do.	+47½% +85%	+47½% +117½%	+47½% +130%

STONEWARE DRAIN PIPES, etc.—*continued*

	£	s.	d.
3 in. Land Drain Pipes (in 12 in. lengths) ... per 1,000	11	0	6
4 in. do. ... ... „	14	9	6
6 in. do. ... ... „	29	19	0
9 in. do. ... ... „	57	5	0

DAMP COURSE

Hessian base bitumen 7 lb. per yd. sup. in 24 ft. rolls cut to wall widths in lots of £6 value and over delivered London area ... ... per yd. sup.			3	3½
Asbestos base ditto 7 lb. per yd. sup. do. do. „			5	2
Lead lined bitumen ditto 9½ lb. per yd. sup. do. „			12	2
18 in. × 9 in. British damp course slates ... ... per 1,000	41	12	8	
14 in. × 9 in. do. do. ... ... „	32	0	0	
9 in. × 9 in. do. do. ... ... „	18	2	6	
18 in. × 4½ in. do. do. ... ... „	19	2	6	
14 in. × 4½ in. do. do. ... ... „	15	4	9	
9 in. × 4½ in. do. do. ... ... „	10	5	3	

STONE

Bath Stone—			
Monks Park ... ... per ft. cube		8	1½
St. Aldhelm Box Ground ... ... „		9	1½
Delivered in railway trucks at South Lambeth B.R. Western Region.			
Doulting Stone Random Blocks. Delivered London area „		8	11
Beer Stone. Delivered London area ... ... „		8	5
Portland Stone—			
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region ... ... „		8	5
Yorkshire Stone—Blue Robin Hood Quality. Delivered to site London in 6-ton lots.			
9 in. × 3 in. Rubbed, weathered, throated and stooled cills ... ... per ft. cube	3	17	9
12 in. × 6 in. do. do. ... ... „	2	15	6
12 in. × 3 in. Plain coping, twice throated ... „	2	3	0
12 in. × 3 in. Weathered and twice throated coping „	2	17	3
14 in. × 6 in. do. do. ... ... „	2	11	9
4½ in. × 9 in. Plinth, rubbed on top and face ... „	2	6	3
3 in. sawn two sides Slabs, random sizes ... ... per ft. sup.		8	3
Templates and Cover Stones, 3 in., 4 in. and 6 in. thick, edges coped for rendered brickwork ... per ft. cube	1	8	3
Do. do. fair one edge for fair faced brickwork ... ... „	1	13	6
Hard York—			
12 in. × 2 in. Square Steps, rubbed on top and edge per ft. run		10	0
14 in. × 3 in. Round-nosed Steps, rubbed on top and front ... ... per ft. cube	2	12	9
12 in. × 6 in. Plain Steps, rubbed top and front ... „	2	6	3
2 in. Rubbed and Jointed Paving, given sizes ... per ft. sup.		9	4
2 in. Sawn Paving, edges squared, in random sizes per yd. sup.	3	5	3

TILES AND PANTILES

Delivered London area by road in 6 tons or over per 1,000			
Machine-made Pantiles and French pattern Tiles from Lincolnshire district	29	8	0
Hand-made Pantiles Berkshire district	50	9	0
Hand-made Double Roman Bridgwater district	58	13	6
Hand-made 10½ × 6½ tiles Berkshire district	14	1	6
Machine-made 10½ × 6½ Staffordshire district	13	18	9
Hand-made Hip and Valley tiles per doz.	1	10	0
Machine-made Hip and Valley tiles do.	1	8	0
Concrete tiles 10½ × 6½	8	1	6
do. Interlocking (49S)	19	0	0

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES

First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual.			
24 × 12	137	2	4
22 × 12	111	8	0
22 × 11	100	14	1
20 × 12	94	9	10
20 × 10	90	8	6
18 × 10	62	17	0
18 × 9	55	1	6
16 × 10	49	10	0
16 × 8	38	15	3

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

Softwood—			
Joinery quality ... ... Ex. Wharf per standard	£115 to £140		
Carcassing quality ... ... do. „	£100 to £105		
1 in. Tongued and Grooved Flooring do. „	£110	0	0
Hardwood—			
Mahogany—African S.E. ... do. per ft. cube	1	10	0
do. Honduras do. ... do. „	3	5	0
Oak European do. ... do. „	2	5	0
do. Japanese do. ... do. „	2	10	0
do. English Logs sawn ... do. „	1	17	6
Teak 8 in. average S.E. ... do. „	3	17	6
Walnut African Logs sawn ... do. „	1	5	0

DOORS (in Lots 1-11)

	£	s.	d.
Delivered London area.			
1¾ in. 4 Horizontal Panel. Pattern 4 in. deal			
2ft. 0 in. × 6 ft. 6 in. ... ... each	1	12	0
2 ft. 3 in. × 6 ft. 6 in. ... ... „	1	13	0
2 ft. 6 in. × 6 ft. 6 in. ... ... „	1	14	0
2 ft. 9 in. × 6 ft. 6 in. ... ... „	1	16	6
2 in. do. but top panel open. Pattern 4 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... „	2	9	0
2 ft. 9 in. × 6 ft. 6 in. ... ... „	2	11	6
2 in. Panel, top panel open. Pattern 2 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... „	2	1	9
2 ft. 9 in. × 6 ft. 6 in. ... ... „	2	3	6

SUNDRIES

Delivered London area.			
1 in. Wood Wool Slabs, 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton) ... ... per yd.		5	8
1½ in. do. (67 yds. to 1 ton) ... ... „		7	4
2 in. do. (52 yds. to 1 ton) ... ... „		8	11½
2½ in. do. (45 yds. to 1 ton) ... ... „		10	3
3 in. do. (39 yds. to 1 ton) ... ... „		11	5½
Quantities under 1 ton add 1d. per ½ in. of thickness.			
½ in. imported insulation Board, quantities over 5,000 sq. ft. per 100 sq. ft.	2	2	6
⅛ in. Hardboard do. ... ... „	2	1	6
3/16 in. do. do. ... ... „	3	2	6
3/16 in. Asbestos Flat Building Sheets ... ... per yd. sup.		3	8
¼ in. do. ... ... „		4	10
Roofing Felt, 1-ply ... ... „		1	7
do. 2-ply ... ... „		2	0
Best Scotch Glue in slabs ... ... per ½ cwt.	5	0	0
do. pearl ... ... „	5	5	0
Croid Glue ... ... 28 lb.	2	6	0
Cut Nails 3 in. (1-ton lots) ... ... per ton	70	10	0
do. 4 in. and up (1-ton lots) ... ... „	67	0	0
Wire Nails, 3 in. (4-cwt. lots) ... ... per cwt.	3	3	6
do. 4 in. and up (4-cwt. lots) ... ... „	3	3	0

METALS

STEEL JOISTS, ETC.

Basis Joists—			
6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in. 12 in. × 6 in. plain cut to lengths delivered London area ... ... per ton	44	5	0
Extra for sizes			
3 in. × 1½ in. 4 in. × 1¾ in. ... ... „	3	10	0
3 in. × 3 in. ... ... „	2	10	9
4 in. × 3 in. 10 in. × 4½ in. ... ... „	1	10	0
5 in. × 2½ in. 5 in. × 3 in. ... ... „	1	15	0
4¾ in. × 1¾ in. ... ... „	3	5	0
5 in. × 4½ in. 7 in. × 3½ in. 13 in. × 5 in. „		15	0
6 in. × 3 in. 24 in. × 7⅛ in. ... ... „	2	0	0
6 in. × 4½ in. 7 in. × 4 in. 8 in. × 4 in. 9 in. × 4 in. 10 in. × 5 in. ... ... „	1	5	0
12 in. × 5 in. 22 in. × 7 in. ... ... „	1	0	0
9 in. × 7 in. 10 in. × 8 in. 12 in. × 8 in. 14 in. × 5½ in. 14 in. × 6 in. 14 in. × 8 in. 15 in. × 5 in. 15 in. × 6 in. 16 in. × 6 in. 16 in. × 8 in. 18 in. × 7 in. 18 in. × 8 in. 20 in. × 6½ in. 20 in. × 7½ in. „		10	0
Steel angles average price ... ... „	46	5	0
Steel tees average price ... ... „	47	5	0
Fabricated work delivered London—			
R.S. Joists cut and fitted ... ... „	61	7	6
Compound girders ... ... „	67	10	0
Stanchions ... ... „	72	17	6
Compound stanchions ... ... „	77	5	0
In Roof Work—Trusses and Purlins ... ... „	90	10	0
Average prices not for awkward work.			
Angle cleats and ⅝ in., ¾ in. and ⅞ in. bolts average price London area ... ... per cwt.	5	3	0

FERRO-CONCRETE BARS

Mild Steel Ferro-Concrete bars British manufacture to BSS785 ex London Stock ⅝ in. diam., and upwards ... ... „	44	10	0
¼ in. diam. ... ...per ton extra	8	12	0
5/16 in. do. ... ... „	6	12	0
⅜ in. do. ... ... „	4	12	0
½ in. do. ... ... „	3	2	0

MILD STEEL TUBES

Tubes to BSS1387 and Fittings. List prices and following discounts:

Galvanised Tube—	W.I. Fittings.	Malleable Fittings
Class A + 11¼%		
Class B + 22½%	Light + 38¾%	Malleable List—28¾% + 40%
Class C + 40½%	Heavy + 46¼%	
Black—		
Class A — 11¼%		
Class B + ⅜%	Light + 55½%	Malleable List—28¾%
Class C + 15 %	Heavy + 33 %	

C.I. HALF-ROUND GUTTERS

Delivered London per yd. in 6-ft. lengths

	Gutters	Nozzles	Stop Ends
3 in.	3/8½	3/4	/11
3½ in.	4/0½	3/7	/11
4 in.	5/2½	4/1	1/5
4½ in.	5/8½	4/6	1/8
5 in.	6/4½	4/11	2/0

METALS—*continued*

C.I.O.G. Gutters

	Gutters	Nozzle	Stop Ends
3 in.	4/9½	4/4	1/2
3½ in.	5/4	4/4	1/5
4 in.	5/11	4/6	1/8
4½ in.	6/4½	5/2	2/0
5 in.	7/0	5/11	2/3

C.I. Rain-water Pipes

Per yd. in 6-ft. lengths	Pipe	Bends	Branches
2 in.	7/11	4/1	5/10
2½ in.	7/11	4/6	7/10
3 in.	8/11	5/8	8/5
3½ in.	10/1½	6/8	10/2
4 in.	11/8½	8/1	12/0

L.C.C. Coated Soil Pipes

2 in.	9/0	7/0	8/5
2½ in.	9/5½	7/8	10/6
3 in.	10/8	8/5	12/6
3½ in.	11/11	10/6	14/7
4 in.	13/6½	11/9	17/2

Above prices for gutters, rain-water and soil pipes for under 5 cwt. lots only. Lots over 5 cwt. see List No. 3300 dated February 1, 1955, plus 12½% and tonnage allowance. 4-ton lots 5 per cent., 2-ton lots 2½ per cent.

L.C.C. Coated Drain Pipes

In 9-fts.

	cwt.	qr.	lb.	per yd.	Bends	Branches
4 in.	1	1	17	31/4	21/9	38/9
6 in.	2	0	1	46/2	58/0	92/9

Asbestos Rain-water Pipes and Fittings

All less 17½ per cent. discount.

	2 in.	2½ in.	3 in.	4 in.
Pipes 6-ft. lengths ... ...per yd.	3/11½	4/3	5/1½	6/9½
Shoes ... ... each	2/7	2/10	3/4	4/6
Single Branches ... ... ,,	4/–	4/9	5/8	7/11
Bends square or obtuse ... ,,	2/10	3/1	4/–	5/8
Swan Necks 4½ in. proj. ... ,,	3/1	4/–	4/6	6/3
do. 6 in. do. ... ,,	3/4	4/–	5/1	6/9

Asbestos O.G. Gutters and Fittings

	4 in.	4½ in.	5 in.	6 in.
Gutters 6 ft. lengths ...per yd.	3/8½	4/2	4/11½	5/11½
Drop ends ... ... each	3/–	3/6	4/1	4/10
Stop ends ... ... ,,	–/11	1/–	1/1	1/3
Angles ... ... ,,	3/1	3/7	4/4	5/1
Nozzles ... ... ,,	3/–	3/6	4/1	4/10
Union Clips ... ... ,,	1/6	1/9	2/2	2/6

Asbestos Half-Round Gutters and Fittings

	3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters 6 ft. lengths per yd.	2/7½	3/1½	3/2½	3/9½	5/3½
Drop ends ... ... each	2/2	2/7	2/10	3/1	4/6
Stop ends ... ... ,,	–/10	/11	1/–	1/1	1/3
Angles	2/6	2/10	3/1	3/4	4/6
Nozzles ... ... ,,	2/2	2/7	2/10	3/1	4/6
Union Clips ... ... ,,	1/1	1/2	1/3	1/5	2/1

	Per ton basis in London £ s. d.
Iron—Staffordshire Crown Merchant Quality	43 12 6
Mild Steel Bars	46 18 0
Mild Steel Hoops	42 17 6

	Ex Merchant's Stock per ton Two-ton lots £ s. d.
Soft Sheets C.R. and C.A.—	
20 gauge	56 2 6
24 gauge	58 12 6
26 gauge	61 12 6
Galvanised Corrugated sheets 6 ft. to 9 ft.—	
20 gauge	64 7 0
24 gauge	67 17 0
26 gauge	73 2 0
Galvanised flat sheets C.R. and C.A.—	
20 gauge	65 7 0
24 gauge	68 17 0
26 gauge	74 12 0

ALUMINIUM AND ALUMINIUM ALLOYS

(Base prices)	£ s. d.
Sheet BS 1470 SIC 18 SWG (36 in. wide) ... ... per lb.	2 9½
Sheet BS 1470 NS3 Utility 18 SWG (36 in. wide) ... ,,	2 7
Coiled strip BS 1470 S1C 18 SWG (24 in. wide) ... ... ,,	2 8½
Coiled strip BS 1470 NS 3 Utility 18 SWG (24 in. wide) ... ... ,,	2 6½
Coiled strip for flashing 99.7% purity 22 SWG (12 in. wide) ... ... ,,	2 11
Corrugated sheet BS 1470 NS 3 Utility Circular Profile 8 ft. × 32 in. × 20 SWG ... ... per sheet	1 11 0
Corrugated sheet BS 1470 NS 3 Utility Industrial Profile 8 ft. × 31½ in. × 20 SWG ... ... ,,	1 16 9
Corrugated sheet BS 1470 NS 3 Utility Mansard Profile 8 ft. × 31½ in. × 20 SWG ... ... ,,	1 10 2
Extruded section BS 1476 E1C simple moulding ... per lb.	2 7½
Extruded section BS 1476 E1C 1 in. diam. round ,,	2 5
Extruded section BS 1476 HE1WP simple angle ,,	2 10½
Extruded section BS 1476 HE10WP 1 in. diam. round ,,	2 9½
Tubing BS 1471 T1C 1½ in. O/D × 20 SWG ... ,,	4 2½
Tubing BS 1471 HT10WP 1½ in. O/D × 20 SWG ,,	5 5½

PLUMBERS' BRASS WORK, etc.

Delivered in London area.

All per doz.	M.O.H. ⅜ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron	87/–	128/8				
Toilet bib cocks for iron ...	109/–	158/5				
Screwdown stop cocks for iron	66/–	95/9	188/–	363/–	522/6	917/6
do. with two unions for lead	89/–	132/–	234/4	472/–	623/6	1389/6
Double nut boiler screws ...	18/8	26/5	47/6	48/6	67/–	93/6
Heavy Croydon ball valves ...	77/–	193/6	312/5	568/8	734/10	—
Plumbers' union brass lead to iron	19/6	23/6	38/6	52/10	70/6	165/–
	1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
Caps and screws	33/–	40/8	59/6	92/5	118/10	155/3
Brass sleeves		31/11	31/11	56/2	74/10	91/5
	1¼ × 6 lb.		1½ × 6 lb.	2 × 7 lb.	3 × 7 lb.	
Lead P. trap with brass cleaning screws	70/9		88/6	141/7	241/11	
Lead S. trap do.	85/6		106/3	174/–	312/8	

Solder	s. d.
Plumbers' ... ... per lb.	4 1
Tinmen's ... ... ,,	4 11
Blow pipe ... ... ,,	5 0

Copper Tubes and Sheets

Copper tubes BSS 659/1944 on the basic price of 35⅜d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 3 cwt.

	Extra d.		d.		d.
⅛ in. × 19 gauge ...	13½	Total per lb.	48⅞	approx. per ft.	13½
¼ in. × 19 ,, ...	11⅞	,, ,,	47½	,, ,,	18½
1 in. × 18 ,, ...	10⅝	,, ,,	45⅜	,, ,,	28½
1¼ in. × 18 ,, ...	9¾	,, ,,	45⅛	,, ,,	34⅛
1½ in. × 18 ,, ...	9¾	,, ,,	45⅛	,, ,,	41
2 in. × 17 ,, ...	11⅛	,, ,,	46¾	,, ,,	65½

Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras ... ... per ton	385 5 0

Zinc

Sheet Zinc 10 gauge (25 SWG) 5 cwt. lots upwards per cwt.	8 5 9
do. 12 gauge (23 SWG) ,, ,,	8 3 3
do. 14 gauge (21 SWG) ,, ,,	8 2 0

Brass Tubes

Brass tubes basic price, plus gauge and manufacturing extras ... ... per lb.	2 4½

LEAD SHEET AND PIPES

Basis selling price in minimum one-ton delivery to one address in London or Home Counties.

	£ s. d.
Lead Sheet, English, 3½ lb. substance and upwards per ton	146 15 0
Lead Water Pipe in coils ... ... ,,	148 0 0
Lead Soil Pipe 10 ft. or over 2 in. to 4 in. dia. ... ,,	149 10 0
,, over 4 in. dia. ... ... ,,	151 10 0
Lead Gas or Untinned Compo pipe ... ... ,,	149 10 0
Extras over Basis for quantities under 1 ton	
5 cwt. and under 1 ton ... ... per cwt.	2 0
3 cwt. do. 5 cwt. ... ... ,,	4 0
1 cwt. do. 3 cwt. ... ... ,,	6 0

Smaller quantities than 1 cwt. priced specially.

Supplying sheet lead and lead pipe to less than basis weights and cutting to sizes less than basis charged extra according to current trade schedule.

Allowance for Old Lead, collected £100 0s. 0d. per ton weighed at buyer's works.

PLASTER, etc.

Coarse Pink in 1-ton loads and over Delivered on Site per ton	7 11 9
do. White do. do. ... ,,	7 19 6
Sirapite Coarse do. do. ... ,,	7 14 0
do. Fine do. do. ... ,,	8 2 0
Blue Lias Lime in 6-ton loads ... ... ,,	6 14 6
Hydrated Lime do. ... ... ,,	5 17 6
Lump Lime do. ... ... ,,	5 7 0
White Keen's or Parian Cement in 1-ton loads ... ,,	10 17 0
Pink Keen's or Parian Cement in 1-ton loads ... ,,	10 11 9
Granite Chips in 6-ton loads ... ... ,,	2 9 4
Hair ... ... per cwt.	4 17 6
Gypsum Plaster Lath or Base Board ⅜ in. thick 600 yds. and over in one delivery. Delivered site ... per yd.	2 3½
1,200 yds. ... ... ,,	2 2½
Do. Insulating do. ⅜ in. thick 600 yds. and over in one delivery. Delivered site ... ... ,,	2 11½
1,200 yds. ... ... ,,	2 10½
Gypsum Plaster Wall Boards, 3 and 4 ft. wide, 6 to 12 ft., ⅜ in. thick, 600 yds. and over in one delivery. Delivered site ... ... ,,	2 6½
1,200 yds. ... ... ,,	2 5½
Do. Insulating do. ⅜ in. thick 600 yds. and over in one delivery. Delivered site ... ... ,,	3 2½
1,200 yds. ... ... ,,	3 1½

PAINT AND DISTEMPER

		£ s. d.
Delivered London area		
Ceiling Distemper	per cwt.	1 7 6
Washable Distemper	,,	5 5 0
Gloss Paint	per gal.	2 10 0
Snowcem cement paint (in 1 cwt. drums)	per cwt.	3 11 0
LEAD PRODUCTS AND OILS		
Ground White Lead, 1 cwt. kegs	per cwt.	9 14 0
Genuine White Lead Paint, 1-19gal. lots in 1 gal. tins	per gal.	3 9 6
Genuine Red Lead, Dry, 1 cwt. keg	per cwt.	7 0 6
Genuine Linseed Oil Putty, 1 cwt. keg	,,	2 18 0
Size XD quality, 28 lb.	per tin	9 0
Raw Linseed Oil (5 gal.) drums extra	per gal.	17 3
Boiled Linseed Oil (5 gal.) do.	,,	17 9
SUNDRIES.		
Turpentine substitute (5 gal.) drums extra	,,	5 6½
do. do. (40 gal.) do. do.	,,	4 8½
Solignum, Brown (5 gal. cans) Exterior	,,	7 4
Creosote (40 gal. Barrels)	,,	2 0
Paste Powder (1 lb. packets)	per lb.	2 0
White Lining Paper	per piece	1 1

VARNISHES, etc.

Delivered London area		
Oak Varnish, Outside or Inside	per gal.	1 18 0
Oak Pale Copal do.	,,	1 18 0
Hard Drying Oak for Inside	,,	2 1 0
Crystal Paper Varnish do.	,,	2 4 0
Eggshell Flat Varnish do.	,,	2 6 0
Finest Carriage Varnish	,,	2 5 0
Front Door Varnish	,,	2 1 0
Japan Gold Size	,,	1 14 0
Black Japan	,,	1 15 0
Brunswick Black	,,	1 10 0
Berlin Black	,,	1 7 6
Terebene	,,	1 13 0
Knotting (1 gal. bottles free)	,,	2 7 0
French and Brush Polish (do.)	,,	2 0 0

GLASS

	per ft. super s. d.
Delivered London area	
18 oz. Sheet Glass Ordinary Glazing Quality. Cut Sizes	6½
24 oz. ,, ,, ,, ,, ,, ,,	8½
26 oz. ,, ,, ,, ,, ,, ,,	11
32 oz. ,, ,, ,, ,, ,, ,,	1 2½
¼ in. Rolled Plate	10
1/16 in. and ¼ in. Rough Cast	1 1
⅛ in. Figured Rolled and Cathedral, Standard patterns:	Per ft. super s. d.
White	10
do. Standard Tints	1 5½
do. Special Tints	2 11½
⅛ in. Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating	1 2
¼ in. Wired Cast	1 3½
¼ in. Georgian Wired Cast	1 3½
Hollow Glass Blocks—	Each
P.B.2. 5¾ × 5¾ × 3⅞ in.	2 11
P.B.3 7¼ × 7¼ × 3⅞ in.	4 5
P.B.32 7¼ × 7¼ × 3⅞ in.	4 5
Radiused Corner Blocks to match up with—	
P.B.2	5 6
P.B.3	7 0
P.B.32	7 0
¼ in. Polished Plate Glass, G.G. Quality—	Per ft. super
In plates not exceeding 2 ft. sup.	3 7
,, ,, ,, 5 ft. sup.	4 5
,, ,, ,, 45 ft. sup.	5 1
,, ,, ,, 100 ft. sup.	5 6

¼ in. Polished Plate, extra sizes, *i.e.*, plates exceeding 100 ft. sup. or 160 in. one way or 96 in. both ways. G.G. quality —Not exceeding 135 ft. sup. or 250 in. one way or 135 in. both ways

Not exceeding 180 ft. sup. or ditto	8 4
Not exceeding 200 ft. sup. or ditto	11 3
Plates exceeding 200 ft. sup. prices on application.	16 0

Substances other than ¼ in. Polished Plate at Special Prices.

Quantity Tariff—Sheet and Sundry Glass.

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass	Minimum quantity	Per ft. sup. s. d.
18 oz. sheet O.Q.	3,000	4½
24 oz. ,, ,,	2,000	6½
26 oz. ,, ,,	2,000	8½
32 oz. ,, ,,	2,000	11½
¼ in. Rolled Plate	1,000	8
⅛ in. Figured Rolled and Cathedral Standard Patterns, White	1,000	8
⅛ in. Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte	1,000	11
1/16 in. and ¼ in. Rolled Plate or Rough Cast	2,000	11
¼ in. Wired Cast, Hexagonal	2,000	1 0½
¼ in. Georgian Wired Cast	2,000	1 1

The Builder

CURRENT RATES OF WAGES

AS FROM APRIL 16, 1956. (Every endeavour is made to ensure accuracy but we cannot be responsible for errors.)

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification.	A	A1	A2
Craftsmen	4/3½	4/3	4/2½
Labourers	3/9	3/8½	3/8

Town.	*Grade.*
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A2
Accrington	A
Addlestone	A
Afan Valley	A
Aldeburgh	A1
Aldershot District	A1
Alfreton UD	A
Alnwick UD	A
Altrincham	A
Amble	A
Ambleside	A2
Amersham	A1
Ammanford	A
Andover	A2
Anglesey, Isle of	A2
Ardingly	A2
Arundel	A2
Ascot	A2
Ashbourne RD	A2
Ashbourne UD	A2
Ashby-de-la-Zouch UD	A
Ashby Woulds UD	A
Ashford (Kent)	A2
Ashford (Middlesex)	A
Ashington UD	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A2
Atherstone RD	A
Attleborough	A2
Axminster	A2
Aylesbury	A2
Aylesham	A2
Bagshot	A2
Bakewell UD	A2
Banbury	A1
Bangor	A2
Barnard Castle UD	A
Barnoldswick UD	A
Barnsley CB	A
Barnstaple	A2
Barrow-in-Furness	A
Barrow-upon-Soar RD (exc. Thrussington A2)	A
Barry	A
Basford RD (exc. Willough-by-on-the-Wolds A1)	A
Basingstoke	A1
Bath	A
Batley MB	A
Baxterley	A1
Beaconsfield District	A
Bearl	A
Beccles	A2
Bedale RD	A
Bedford	A
Bedlington	A
Bedlingtonshire UD	A
Bedwas	A
Beeston & Stapleford UD	A
Belper UD	A
Belton	A
Berkhamsted	A
Berrington	A1
Berwick Borough	A
Beverley MB	A
Bewdley MB	A
Bexhill-on-Sea	A2
Bideford	A2
Biggleswade	A2
Billericay	A
Billing	A
Billingham UD	A
Bilsthorpe	A
Bilston MB	A
Birchington	A2
Birkenhead	*
Birmingham CB	†A
Bishop Auckland UD	A
Bishop's Stortford	A
Bishops Castle MB	A2
Bispham	A
Blackburn	A
Blackpool	A
Blackwell RD	A
Blandford	A2
Blaydon UD	A
Blidworth	A
Blyth B.	A
Bodmin	A2
Bognor Regis	A2
Boldon UD	A
Bolsover UD	A
Bolton	A
Boston MB	A
Bourne End	A
Bournemouth District	A
Brackley MB	A2
Bracknell	A2
Bradford CB	A
Bradford-on-Avon	A2
Braintree	A1
Brandon & Byshottles UD	A
Brecon—Borough of	A1
Breconshire, County of	‡A2
Brent Knoll	A2
Brentwood	A
Bridgend	A
Bridlington MB	A
Bridlington RD	A1
Bridgnorth MB	A1
Bridgnorth RD	A2
Bridgwater	A1
Brierfield	A
Brighouse MB	A
Brighton & Hove	A
Bristol District	A
Broadstairs	A
Bromsgrove UD	A
Broughton, Flint	A
Buckfastleigh	A2
Buckingham	A2
Buckley	A
Bungay	A
Burnham-on-Crouch	A2
Burnham-on-Sea	A2
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A1
Buxton	A
Byfleet	A1
Caernarvon	A2
Caernarvonshire, Cnty. of	‡A2
Calder Valley	A
Camberley District	A2
Cambridge	A
Cannock UD	A
Canterbury	A2
Cardiff	A
Cardiganshire, County of	‡A2
Carlisle	A

NEGOTIATED CONTRACTS

Mr. Frank Taylor's Views

AN "increased volume of new contracts" is reported by Mr. Frank Taylor, chairman of Taylor Woodrow Ltd., building and civil engineering contractors, of London, in his 21st annual statement issued to shareholders this week in illustrated brochure form, with the report and accounts for the year ended December 31 last.

On building and civil work at home, Mr. Taylor says that the trend towards negotiated contracts is to his mind an important step in the right direction. He adds: "When we are brought into negotiation with clients and their advisers at the outset of a contract it is possible to save endless time and money by submitting a prepianned scheme for the project based upon building technology and know-how, and present a complete scheme from drawing board to name-plate."

On house-building, it is reported that considerable thought had been given to the fabrication and installation of plumbing units and these had stood up to the severe weather in the early months of 1956.

AUTOMATION AND CEMENT

Chairman's Views

SPEAKING at the annual general meeting of the Rugby Portland Cement Co., Ltd., in London on June 1, MR. HALFORD REDDISH, the chairman said:

"I have been asked how automation is likely to affect the cement industry. There is nothing inherently new about automation except the word itself. Mechanisation in one form or another has been going on throughout the ages. Development of electronics and the control of machines to a greater extent by machines is but a natural extension of the process.

"The cement industry, with its small labour force and very large capital expenditure per employee, has been highly mechanised for very many years—hence the steadily increasing output of cement at a comparatively low price. We are always on the lookout for labour-saving and cost-cutting devices, but it is difficult to imagine any major application of electronics revolutionising the production of cement. In time, we hope, it may bring down costs in other industries from whom we buy supplies."

NO SAFETY RAIL ON A SCAFFOLD

Midlands Firm Fined

ACCIDENT records showed that one man was killed every two days in the building trade, and in the majority of cases the accidents were due to falls from heights, MR. R. E. SAWYER, factories inspector, said at Old Hill magistrates' court on June 6. He was prosecuting for the Board of Trade John Hicken Ltd., of 153, Dartmouth-street, West Bromwich, who were fined £10 for not fitting a safety rail on a gangway.

The regulation provided, said Mr. Sawyer, that all gangways from which a person could fall more than six feet six inches should have a safety rail and toe board not less than eight inches high.

The firm were sub-contractors on houses which were being erected off Wolverhampton-road, Tividale, and a factory inspector found there was no safety rail on a scaffold. A boy had walked along the gangway with tiles on his head and placed them on the roof. Had he stumbled and fallen he might have met with serious injury as there was a drop of 17 feet.

Mr. F. Hallchurch, who defended, expressed regret on behalf of the firm who, he said, had a clean record. The firm asked that a safety rail should be fixed, but nothing was done.

BUILDING TRADE PRACTICE CRITICISED

Stipendiary Magistrate's Strictures

SHARP criticism of a system in the building trade under which small gangs of bricklayers appoint a leader to act as spokesman for getting them jobs with contractors was made by the Stipendiary Magistrate, Mr. Kenneth Wood, at Willenhall (Staffs) on June 7.

Told that it was a practice that had grown throughout the country in the last three or four years, MR. WOOD commented: "It seems to point in the direction of disorder and chaos rather than a system of order in dealing with industrial life. I do not like it and I wonder how long this has been going on. I dislike the term 'spokesman' or 'leader.' He must either be a contractor or a sub-contractor. Someone ought to be doing the contracting."

Nathan Hyde, a building contractor, of Sedgeley, admitted using some loose bricks to support scaffolding and failing to provide a guardrail and toeboard on a working platform. He was fined £3 in each case and 9s. costs.

MR. P. A. TREDREA submitted that the men's leader, Gordon Heighway, was a subcontractor and responsible for the methods by which the scaffolding was erected. He had control of the work and was responsible for the breach of the regulation, not Hyde. MR. R. E. SAWYER, HM Inspector of Factories, however, said that Hyde kept a scaffold register and therefore recognised that he was responsible for ensuring that it complied with the regulations.

OFFICIAL NOTIFICATION

Open General Licence for the Export of Copper Goods

THERE is a control over the export of certain copper goods to ensure that scrap metal is retained in the United Kingdom.

In this connection the Board of Trade announce that the Open General Licence which authorises the export of certain copper goods valued at £330 per ton and of certain copper alloy goods valued at £220 per ton is being revoked and replaced by a new Open General Licence which raises the value limit for copper goods to £350 per ton and that for copper alloy goods to £240 per ton.

This licence came into operation to-day, and from June 15 individual licences will be required where the relevant values are £350 and £240 or less. The copper and copper alloy goods are those specified in Group 6 (2) of the First Schedule to the Export of Goods (Control) (Consolidation) Order, 1955.

Inquiries regarding this licence should be made to the Export Licensing Branch, Atlantic House, Holborn Viaduct, London, EC1. (Tel.: City 5733.) Copies of the Open General Licence, price 2d., from HMSO.

NEWS IN BRIEF

Employment Situation, April

The Ministry of Labour and National Service announce that the number of workers in civil employment in Great Britain at the end of April was 22,980,000, having increased by 30,000 during the month. At the end of April there were 1,481,000 workers engaged in the building and contracting industry, an increase of 11,000 over the figure for March.

Lowering Costs

By cutting out a roof garden on the 15-storey block of flats to be built at Barton Hill, Bristol Housing Committee are reducing the cost by £6,975 to £315,744. The high cost of the block is partly due to heating apparatus which is to be used to serve other blocks in the neighbourhood.

Road Federation Booklet

A £115m. plan to provide a modern road system for Lancashire, Cheshire and Staffordshire is outlined in a booklet published by the Roads Campaign Council under the title "Roads Matter—Lancashire, Cheshire, Staffordshire." The publication appears as a background survey to the Council's 24-town campaign which is being conducted in the Midlands.

Week-end Course for Foremen

The second week-end course for builders' foremen to be held in the Southern Counties Region of the National Federation of Building Trades Employers will take place from July 13 to 15 at Moor Park College, Farnham, Surrey. Subjects to be lectured on include "The general foreman and the building team," "Site administration," "Work study and method study on the site," "Personnel management," "Contract and bills of quantities," and "Safety on the building site." The lectures will be followed by discussion on the subject. Details of the course from Mr. D. Thomson, Sterling Buildings, Carfax, Horsham, Surrey.

BUILDING WAGE CLAIM

"Irresponsible and Unreasonable"

"RECENTLY, the Amalgamated Society of Woodworkers, the largest union in the building industry, decided to press for a wage increase of another 9d. an hour—£1 12s. 8d. a week—whilst the AUBTW decided to press for a substantial increase. These decisions are irresponsible and unreasonable," MR. NIGEL HANNEN, President NFBTE, told the half-yearly meeting of the Eastern Federation at Norwich on Tuesday. "They are irresponsible because we have it on the authority of the Chancellor of the Exchequer that another round of wage increases could be disastrous for the national economy; and they are unreasonable because it is only a few weeks since the Industrial Disputes Tribunal, on a claim for 6d. an hour, awarded 2½d. This, with an automatic rise of 1d. in respect of the cost of living, made a total increase in building wages for the year of 12s. 10d. a week.

"I have not the slightest hesitation in saying that there is no justification whatever at the present time even for suggesting that wages claims should be put forward," Mr. Hannen added.

OVERSEAS BUILDING

From Our Own Correspondent

CANADA.—A number of projects in the pulp and paper industry are to be undertaken by the large companies operating in the timber areas of the Dominion.

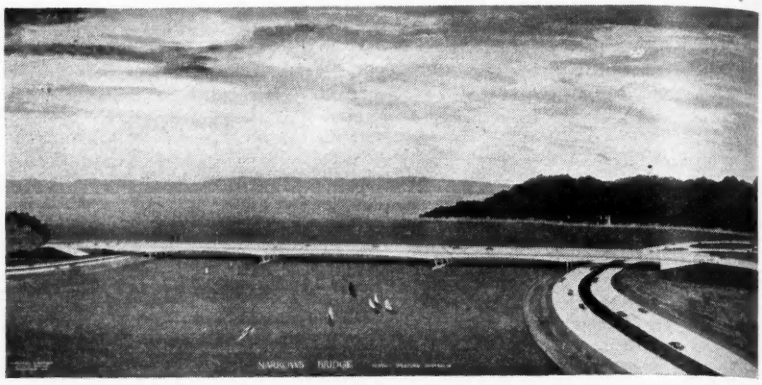
A $36m. bleached kraft mill is to be built at Crofton by B. C. Forest Products with a capacity of 425 tons per day. . . . Another firm, Celgar, proposes to start construction on a $30m. pulp plant at Castlegar producing 300 tons per day. . . . Other projects which the British Columbia authorities have sanctioned include a $4m. converting and box plant, a $4m. paper board plant, and a $1m. corrugated container plant.

In the Atlantic provinces there are a number of suggestions for the construction of additional mills. In New Brunswick it is thought that there is room for two more mills and in Nova Scotia the Government is actively pursuing proposals that would result in new mills being put up at Sheet Harbour and Mulgrave. In Newfoundland the Government is endeavouring to interest an outside concern in opening up a third newsprint mill.

As chemical industries expand throughout the dominion so does the building of new plants. Much of the expansion is linked with the growth of mineral and forest product industries. At North Bay a $5m. explosives plant is to be built; an $11m. plant is to be built in British Columbia to produce chlorine and caustic soda and a new $5m. plant is to be erected in North Vancouver to produce sodium chlorate. . . . The expansion of refineries has led to the establishment of a $12m. plant for Canada's first production of tetraethyl lead; synthetic fluid cracking catalysts are also being produced for the first time in Canada and a $6m. plant is to be set up to produce sodium silicates.

EGYPT.—A project for improvement and extensions to Cairo's main sewage system, which has been under study for the past two years, recently formed the subject of a report by a special committee formed by the Ministry of Municipal and Rural Affairs. The first part provides for the construction of a new sewage station near Bassatine, to the south of Cairo, plans for which are expected to be ready in 1957, in order that an adjudication can take place by June of that year. The second part will be concerned with the supply and laying of necessary sewage pipes. The Cairo Sewerage Commission is considering the appointment of a firm of foreign consulting sanitary engineers to advise on the project.

The National Production Council has under consideration a project for the establishment of a small aluminium plant at Aswan, which will use surplus power from the Aswan Dam hydro-electric station now under construction and which will later be capable of expansion when the High Dam and its power station are built. . . . Cement manufacturers will be interested to note that owing to heavy demands from the booming building industry and for Government requirements and public utility works in Egypt, the output of local cement factories is not keeping pace with demand. Some 70,000 tons has been ordered from China.



NARROWS BRIDGE, PERTH, WESTERN AUSTRALIA.—The Government of Western Australia has recently approved proposals for the highway bridge to be completed in the next three years across the Swan River at the Narrows, Perth, Western Australia. The bridge, which is to be a prestressed concrete structure, is to provide a six-lane carriageway seventy feet in width and two pathways each ten feet in width. The total length between abutments is to be 1,100 feet, divided into five spans of which the longest is to be 320 feet. The design has been prepared by Messrs. G. Maunsell and Partners of Westminster, who have availed themselves of the advice of Sir William Holford and Partners on matters related to the appearance of the bridge, which is of particular importance in view of the beauty of the setting in which it is to be built.

IRAQ.—The Development Board and the Ministry of Development of the Government of Iraq will be calling shortly for tenders for the following:

Western Bagdad Development, Sector 4, experimental housing scheme for the construction of 200 two-storey houses; construction of 1,200 houses and community facilities in Mosul; construction of 2,000 houses and community facilities in Basrah; Western Bagdad Development, sectors No. 8 and 13, construction of 2,400 houses; construction of 1,000 houses and community facilities at Kirkuk; construction of 400 houses and community facilities near Mosul for Mosul Cement Factory; and construction of 400 houses in Mosul for the Mosul Sugar Plant. Details advertised elsewhere in this issue.

PAKISTAN.—A naval base is to be built at Chittagong. Among the facilities for ship repairs will be a dry dock and a wet basin. . . . According to reports the Pakistan Industry Development Council has decided to sponsor a 500-loom jute mill at Hajiganj, in the Tipperah. . . . An agreement concluded between the governments of Canada and Pakistan provides for the installation of a power house with a capacity of 16,640kW adjacent to the existing diesel station at Goalpara.

PHILIPPINES.—The National Power Corporation was given authority recently to proceed with the building of the second unit of the Ambuklao hydro-electric scheme at Binga. The project will cost $37m. and will take two years to complete.

Plans have been announced by the Manila Electric Company for the expenditure of $3,800,000 on transmission lines, sub-stations and other improvements. The company is also considering the construction of a steam turbine generating station. . . . Construction work is to commence in earnest on the irrigation scheme in Laguna. The project will supply the requirements of eight towns in the province. This is a joint undertaking of the National Economic Council and the ICA under the American-Philippine economic co-operation agreement.

TRINIDAD AND TOBAGO.—The Government of Trinidad and Tobago have approved proposals for the Colony's second five-year development plan, estimated to cost $90½m. Water is given top priority in the new programme, $12½m. being allocated for the Navet Dam, to commence construction in 1957; whilst a further $12½m. will be spent on head works, water mains and boreholes, to provide all the main areas of population with a full 24-hour water supply. The consultant engineers are Howard Humphreys and Sons, of London.

The roads programme accounts for $14m. and provides for the first stage of the North Coast road from famed Maracas Bay to Las Cuevas, estimated to cost $2½m.; and over $5m. to extend this road on to Fillette and Blanchisseuse. The roads programme will be carried out by the Director of Works and Hydraulics, 1, Edward-street, Port of Spain.

On new building work the Government

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plan to spend $5m. on schools, $5m. on housing, $4½m. on hospitals and health centres, and $7m. on other public buildings.

Projects specifically mentioned by the Financial Secretary include a $1¼m. residential teachers' training college for 200 students; a $750,000 technical institute in Port of Spain; a new maternity block, operating theatres and X-ray department at the Colonial Hospital, Port of Spain; a central training school for nurses and a nurses' hostel at San Fernando; a new airport terminal at Piarco, and a new legislative council building.

Plans for these works will be prepared by the Architectural Branch, Department of Works and Hydraulics. Coode and Partners, of London, have been retained by the Government as consultants on port works and harbour installations.

Nigerian Road Contract

Richard Costain, Ltd., have been awarded a contract by the Nigerian Federal Government for the construction of a new road and causeway linking Lagos with the dock area at Apapa. HM the Queen opened the £4½m. Apapa Wharf Extension built by Costain in February, and the new road will provide easier access to it than the existing one. It will be over a mile long, with a dual carriageway and roundabout, and will take 27 months to build. Where it crosses the Ebute Metta creek six 12 ft. culverts will be included in the construction. Fascine mattresses, normally used when traversing boggy ground, will be used in building the embankment. The consulting engineers are Coode and Partners.

Consultants in Libya

A London firm of architects and planning consultants, Covell and Matthews, F/ARIBA, 34 Sackville-street, Piccadilly, W1, have been appointed consultants to the Libyan Public Development and Stabilisation Agency to advise upon perishable goods export terminal buildings and abattoirs for Tripoli and Benghazi. These building projects are estimated to cost in the region of £1m. and the work is expected to be completed by mid-1958.

Road Plant, South Africa

* The Secretary of the Orange Free State Provincial Tender Board, has called for tenders for road machinery which includes: 25 rollers of various kinds, seven road disc ploughs, four chip spreaders, two spike harrows, six concrete vibrators and four sump pumps. The closing date for tenders is June 26. (Tel.: Chancery 4411, ext. 738 or 771, Ref. No. ESB/13654/56.)

Peace River Bridge, Canada

* The Pacific Great Eastern Railway Company has called for tenders for the supply, fabrication, delivery and erection of the superstructure steelwork complete, consisting of five 290ft. deck truss spans, two 160ft. deck truss spans and two 60ft. deck girder spans, for the Peace River Bridge. The closing date for tenders is June 27. (Tel.: Chancery 4411, ext. 738 or 771, Ref. No. ESB/13319/56.)

* From the Board of Trade Special Register Information Service. The telephone number and extension at the end of the paragraphs relate to the department of the Export Service Branch, Lacon House, Theobalds-road, WC1, where further information can be obtained.

The SCOTTISH BUILDER

Objection to Flats

ABERDEEN Corporation Housing Committee have abandoned a plan to erect a multi-storey block of flats on a site belonging to the North-East Regional Hospital Board. The flats would have overlooked a hospital near by, and also the board felt that the site might be required for hospital purposes in the future.

Physical Recreation Centres

THE Scottish Council of Physical Recreation are to replace the present centre for outdoor training at Glenmore Lodge. The new lodge will be built near the present one, on a site recommended by the Forestry Commission, and it will accommodate about 60 students. The Hills Hotel, at Largs, is to be taken over for use as a national recreation centre by the Council.

NEW BUILDINGS

Aberdeen.—Plans in hand for new pub. sch. at Springfield-rd., Mastrick housing development. A: J. A. O. Allan, Ross & Allan (F/A), 10, Bon Accord-pl., Westend, Aberdeen.

Aberdeen.—Plans in hand for scheme of conversion and additions to the Thornegrove Mansion at an estimated cost of £43,000. Council A: George M. Keith (F), Planning & Architectural Dept., Broad-st., Aberdeen.

Abingdon.—Plans in hand for additions to the Prot. prim. sch. A: William R. Watt (F), Planning & Architectural Dept., Albert-st., Motherwell/Wishaw.

Cleland.—Plans in hand for 82 houses at the Knowoneble housing development site. A: Samuel MacColl (A), Planning & Architectural Dept., County-bldgs., Beckford-st., Hamilton West.

Fifeshire.—Plans in hand for new houses at Gauldry. Council A: Robert S. Lawrie (F), Planning & Architectural Dept., County-bldgs., St. Catherines-st., Cupar/Fife.

Glasgow.—Plans in hand for 20 four-storey blocks consisting of 136 four- and 400 three-apartment houses as Unit No. 4 development of the Castlemilk housing scheme. A: Archibald G. Jury (F), Planning & Architectural Dept., Glasgow Cross, Glasgow, EC1.

Glasgow.—Plans partly prepared have been approved for the new 15-storey building at George-sq. for the Stow College of Printing, Engineering and other trades. A: Wylie, Shanks & Wylie (F/A), 12, Claremont-gdns., Glasgow, WC3.

Glasgow.—Plans prepared for new Parish Church Hall at Barlia-ter. A: W. N. W. Ramsay (A), 11, Park-cir., Glasgow, WC3.

Glasgow.—Plans prepared for Donaldson & Filer, Ltd., Cogan-st., for extensions and additions at their Pollockshaws works. A: James Taylor Thomson, MacCrae & Saunders (F/A), 212, Bath-st., Glasgow, WC2.

Glasgow.—Plans prepared for Harland & Wolff, Ltd., for new buildings at Balmoral-st., Scotstoun. A: Hobart & Heron, Scottish Provident-bldgs., Belfast.

Glasgow.—Plans prepared by their own engineers have been approved for scheme of reconstruction and additions at Bothwell-st. for Ressleigh, Ltd., 147, Bothwell-st., Glasgow, WC2.

Glasgow.—Plans in hand for the 2nd and 8th development of the Garthmunnock housing scheme. A&QS being respectively Archibald G. Jury (F), Planning & Architectural Dept., Glasgow Cross, Glasgow, EC1, and James G. Lyon, FRICS.

Glasgow.—The following have been appointed by the Corporation as architects for various school schemes:—

New schools at Numbers 2 and 8 housing sites, Garthmunnock development, Alexander B. Campbell (A), 128, Elderslie-st., Glasgow, WC3; additions and alterations at Strathclyde Public, James Wallace (F), 72, Bath-st., Glasgow, WC2; additions at Springbank Prot. prim., Crawford & Neil (F/A), 1, Blythswood-sq., Glasgow, WC2; St. James's Boys' prim., additions, Donald J. Cameron (F), Bath-st., Glasgow, WC2; St. Augustine sch. pav., Frank Burnet & Boston and Bell (F/A), 180, Hope-st., Glasgow, WC2; pav. at Nethercraigs Prot. prim., Baron Bercott (F)., 112, Blythswood-st., Glasgow, WC2; and additions and alterations at Whitefield-st. sch., Weddle & Thomson (F/A), 216, Bath-st., Glasgow, WC2.

Greenock.—Plans prepared for scheme of new Corporation houses at Filter-st., The Whinhill. A: Robert L. Rankine, Planning & Architectural Dept., Municipal-bldgs., Wallace-sq., Greenock.

Lanarkshire.—Plans in hand for additions and alterations to the Allerton Halls. A: Gowie & Miller (F), 7, Calder-st., Motherwell/Wishaw.

Lanarkshire.—Plans to be prepared for new housing schemes at Mount Vernon by A. A. Stuart & Sons (Glasgow), Ltd., 2275, London-rd., Mount Vernon, Lanarkshire.

SCOTTISH BUILDING TRADE WAGES

FOLLOWING are rates of wages authorised by the Scottish National Joint Council as from April 16, 1956. They apply to the whole of Scotland, including the islands of Orkney, Shetland, etc.

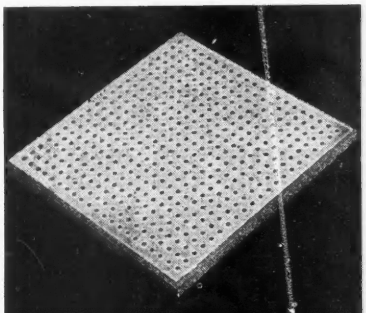
Grade A: Craftsmen 4s. 3½d.; Labourers 3s. 9d.

For apprentices, the rates are:

Year.	*Percentage of Craftsman's rate.*	*For week of 44 hours.*
		s. d.
1st	25	47 2½
2nd	33½	62 11½
3rd	50	94 5
4th	66⅔	125 10½
5th	75	141 7½

For female labour, the rates are:

	s.	d.
Operatives on craft operations (at end of probationary period)	3	9
Operatives on labouring operations (at end of probationary period)	3	5½



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FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

JUNE 18.

†**Holland (Lincs) CC.**—4-class instalment of 7-class county prim. sch. at Wyberton, nr. Boston. County A, Boston. Dep. £2 2s.

JUNE 19.

*†**Birmingham City C.**—Alterations to cottages at Erdington Cottage Homes, Fentham-rd., Erdington. City A. Dep. £2 2s. Tenders by July 11.

JUNE 20.

*†**Durham CC.**—Police houses at Stillington and Witton-le-Wear. G. R. Clayton, South-st., Durham.

JUNE 21.

*†**Northampton CB.**—Extension phase II Northampton grammar school for girls, St. George's-ave. Chief Education Officer, "Springfield," Cliftonville.

*†**West Sussex CC.**—New sec. mod. sch. at Ifield, Crawley. County A, Chichester.

JUNE 22.

*†**Crawley Development Corporation.**—292 garages. Chief A.

*†**Isle of Ely CC.**—Residential hostel, Horticultural Institute, Wisbech. County A, March. Dep. £3 3s. Tenders by July 27.

*†**Reading CB.**—Alterations and additions, Grove secondary school, Emmer Green. Chas. Smith & Son, architects, 164, Friar-st. Dep. £2 2s.

JUNE 25.

*†**Essex CC.**—Additional classrooms Waltham Abbey, Upshire County primary school. County A, Chelmsford.

JUNE 26.

Hemsworth RDC.—(1) 30 three-bedroomed houses at Great Houghton; (2) 14 three-bedroomed houses at Ryhill; (3) 14 three-bedroomed houses and 12 aged persons' bungalows at Shafton, all in traditional construction. One or more. E&S, Brierley Hall, nr. Barnsley. Dep. £2 2s.

JUNE 27.

*†**Durham CC.**—Additional classroom accommodation to six schools and remodelling playground Murton Colliery school and canteen scullery, etc., South Hetton Schools. County A, South-st., Durham.

JUNE 29.

*Southend-on-Sea CB.—Extension for lift, Connaught House, Rochford. Boro' A, 30, Alexandra-st. Dep. £2.

*Wrexham BC.—86 dwellings, Queen's Park estate, section 8. BE&S. Dep. £3 3s.

JUNE 30.

*†**Ealing TC.**—Hostel for aged people, Northolt Park for Greater Ealing Old People's Homes, Ltd. D. Herman, Hon. Sec., Town Hall, Ealing, W5.

†*Newcastle Regional Hospital Board.—New accident and orthopædic dept., Middlesbrough General Hospital. Sec., Walker Gate Hospital, Benfield-rd., Newcastle upon Tyne 6.

JULY 2.

*East Riding CC.—Two classrooms, Elloughton County primary school and sanitary block and alterations, Leven CE school. County A, Beverley. Dep. £2 each.

*Lincoln (Kesteven) CC.—Farm houses, Metheringham and Great Hale estates. County Land Agent, Sleaford.

*Middleton BC.—18 flats and 20 houses, Hollin estate. G. Syddall, Boro' A. Dep. £2 2s.

*Wood Green BC.—Boiler House, Destructor, Western-rd., N22. BE&S. Dep. £1 1s.

JULY 4.

*Berks CC.—Nurses' house, Lovel-rd., Winkfield. County A, Wilton House, Parkside-rd., Reading. Dep. £2 2s.

*Southport CB.—Birkdale sec. mod. sch. (a) Designs and tenders for erection of small single-storey prefabricated building 45ft. by 25ft. and annexe thereto; (b) tenders for erection of traditional building of similar dimensions. Boro' A and Town Planning Officer, 99/105, Lord-st. Dept. £1 1s. each.

JULY 5.

*Barnstaple BC.—Five pairs and one block of houses, Forches and West Sowden estates. BS. Dep. £2 2s.

JULY 6.

*Bexley BC.—10 shops and maisonettes, Lodge Hill estate, Welling. BE, West Lodge, Broadway, Bexleyheath. Dep. £3 3s.

JULY 7.

Failsworth UDC.—Five pairs of one-bedroomed bungalows at Clive-rd., off Ashton-rd. West, and 15 pairs two-bedroomed houses and seven pairs of one-bedroomed bungalows at Coronation-rd. extension. E&S. Dep. £2 2s.

JULY 9.

Chichester City C.—Building extensions to Funtington pumping station with sundry connecting mains, specials, etc., including excavation work. Sanford, Fawcett & Ptnrs., constg. engrs., 53, Victoria-st., SW1. Dep. £5 5s.

JULY 11.

*Reading CB.—Water pumping plant house, Peppard-rd., Emmer Green. Boro' A. Dep. £2 2s.

JULY 16.

*Battle RDC.—26 houses, Cavix Field, Northiam. A. H. Neave (F), 38, Mount-st. Dep. £2 2s.

Coseley UDC.—100 five-person houses at Wallbrook housing site. C of C. Dep. £2 2s.

NO DATE.

†Altrincham BC.—12 bungalows for aged persons at Whitley-gdns., Grange estate. Boro' S. Dep. £3 3s.

*Gosport BC.—150 houses and 1,000 yds. run of estate roads and sewers, Rowner estate. BE. Dep. £2 2s.

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PAINTING, MATERIALS, ETC.

JUNE 20.

*†**Southampton CB.**—Repainting 306 lighting columns, etc. BE. Tenders by June 28.

JUNE 21.

*†**Leeds Regional Hospital Board.**—Heating and hot water supply, General Hospital, Newall Carr-rd., Otley. Arch. to Board, Park-parade, Harrogate. Dep. £2 2s. Tenders by July 23.

*†**Northampton CB.**—Window casements, etc., Bective infants' school. Chief Education Officer, "Springfield," Cliftonville. Dep. £2 2s.

JUNE 26.

*Salford City C.—Conversion of heating at Central Library and Art Gallery, Peel Park, City E.

JUNE 29.

*Carlisle City C.—Metal windows, municipal housing. City S., 18, Fisher-st.

*Sunderland CB.—Sanitary fittings, etc., to 208 houses. Boro' A, Grange House, Stockton-rd. Dep. £2 2s.

*Surbiton BC. — Internal redecoration, Assembly rooms. R. Thirlway, BE&S.

JUNE 30.

*Lincoln (Kesteven) CC.—Redecoration work at three schools. County A, Sleaford.

JULY 16.

*Luton BC.—Ironmongery for 635 dwellings. Boro' A. Dep. £2 2s.

MUNICIPAL AND CIVIL ENGINEERING WORKS, ETC.

JUNE 18.

†**Smallburgh RDC.**—Construction of East Ruston headworks of Area "A" water supply scheme, comprising r.c. rapid gravity filters, mass and r.c. balancing tank, brick and concrete pumphouse, ancillary works and provision of unskilled assistance to machinery contractors. Steel available. W. Herbert Bateman & Ptnrs., constg. engrs., Halifax-hse., Bank Plain, Norwich. Dep. £5 5s. Tenders by July 9.

JUNE 25.

Brighton CBC.—Transporting from Corporation stores and laying (1) 1,840 lin. yds. 9-in. spun-iron water main, pipes, valves and special castings from Old Patcham, Ladies Mile-rd. to Hollingbury industrial site, and (2) 5,500 lin. yds. 12-in. spun-iron water main, etc., from Balsdean pumping station to Racehill reservoir. Waterworks Engr., 12, Bond-st., Brighton, 1. Dep. £2 2s. each contract.

Driffield UDC.—Reconstruction of sewage purification works—70 lin. yds. 27-in. dia. outfall sewer, screening chambers, storm overflow and detritus channel, storm tank, two sedimentation tanks, pumping station, mess-room and laboratory with underground pump chambers and sumps involving 1,250 cub. yds. excavation, two bacteria beds, two sludge digestion tanks in prestressed concrete, 2,600 sq. yds. underdrained sludge drying beds, covered sludge loading platform pipelines, cables, roads and general site works. John Dossor, MICE, C.e.'s. constg. engr., Monk Bar-chmbrs., York. Dep. £10.

Nuneaton BC.—Construction of Donnithorne-ave. canal bridge and approach works. The bridge to be constructed with r.c. abutments and prestressed concrete decking, having 60-ft. span and width of 34 ft. Approach works to consist of 300 lin. yds. 22-ft. wide carriageway of pitched foundation and bituminous macadam surfacing, with kerbing and paving. Boro' S. Dep. £2 2s.

JUNE 28.

Bucks CC.—Partial reconstruction haunching and channelling in concrete, grading with tarmacadam, drainage and ancillary works on London/Birmingham trunk road, A.41 (1) from Gallow's Bridge to Sharps Hill (900 yds.) and (2) from Sharps Hill to Kingswood (850 yds.). County S. Dep. £2 each contract.

JUNE 29.

Birmingham City Water Dept.—Laying, jointing and surrounding with concrete 900 yds. 60-in. dia. concrete-lined steel main on Romsley siphon of Elan aqueduct, 2½ miles south of Halesowen. Gen. Mgr. and Sec. Dep. £5.

West Kesteven RDC.—12,700 lin. yds. 6-in. to 3-in. dia. spun-iron pipe water mains between Barkston Heath, Londonthorpe, Welby, Oasby, Aisby and Heydour. Elliott & Brown, C.e.'s constg. engrs., Stanley-hse., Pelham-rd., Nottingham. Dep. £5 5s.

JUNE 30.

Manchester Corporation Waterworks.—Extension of Denton purification plant.—One

flocculation tank, six sedimentation tanks (total cap. 330,000 galls.), pipework, etc. Secretary. Dep. £2 2s.

JULY 2.

Derby CBC.—*Eastern intercepting sewer:* 925 lin. yds. 39-in. dia. sewer, etc.—*Markeaton estate development:* 223 lin. yds. 24-in. dia. SW drain.—*Land at Raynesway:* 625 lin. yds. 30-in. to 36-in. dia. SW drain.—Appurtenant works and river outfalls. Boro' E&S. Dep. £5 5s.

JULY 6.

East Shropshire Water Board.—Longdon-upon-Tern water supply—3,500 lin. yds. 1½-in. to 4-in. dia. asbestos-cement water main. A. H. S. Waters & Ptnrs., engrs., 25, Temple-row, Birmingham, 2. Dep. £3 3s.

Sutton and Cheam BC.—Private street works at Gilhams-ave., comprising 1,760 lin. yds. kerbing, 8,500 sq. yds. bitumen macadam to footpaths and carriageway and incidental works. Boro' E&S. Dep. £2 2s.

JULY 7.

East Suffolk and Norfolk River Board.—Steel sheet piling flood wall, 1,100 ft. long, to north of Felixstowe dock. Contract involves driving of 25,000 sq. ft. (222 tons) steel sheet piling, 30 tons steel walings and tiebars, 4,000 cu. ft. r.c. and 4,000 cu. ft. filling. Ch. Engr. to Board, "The Cedars," Albemarle-rd., Norwich. Dep. £2 2s.

JULY 16.

St. Faiths and Aylsham RDC.—R.c. water tower, capacity 100,000 galls., with top water level 95 ft. above ground, together with ancillary works at Sall. W. Herbert Bateman & Ptnrs., constg. engrs., Halifax-hse., Bank Plain, Norwich. Dep. £5 5s.

AUGUST 21.

Ministry of Transport & Civil Aviation.—Neath By-pass—2½ miles dual carriageway, four steel bridges, one steel viaduct, two r.c. bridges (one of prestressed construction), all mainly with r.c. piers with mass and piled concrete foundations, excavation in trenches and cuttings and earthwork in embankment.—Rendel, Palmer & Tritton, constg. engrs., 125, Victoria-st., SW1. Dep. £25.

GENERAL BUILDING WORK

(LONDON)

Bromley, Kent.—SCHOOL.—A new building estimated to cost £247,000, to re-house the pupils of Bromley gram. sch. for girls, Nightingale-la., is included in Kent EC's draft building programme for 1957, now approved. The new school will have 750 places and will be built at the Rookery site, Bromley Common. County A, Maidstone.

Dartford. — SCHOOL. — The Minister of Education has approved a proposal to establish a new county sec. sch. for 600 pupils at Longfield.

Harrow. — INFANTS' SCHOOL. — Middlesex Education Com. proposes to proceed with the second stage of the Pinner Park infants' school consisting of hall, storage accommodation, boiler house, extension of playground, new entrance from Melbourne-avenue and a new kitchen to serve this school and the adjoining junior school. The estimated cost is £24,380.

Lambeth.—SITE ACQUISITION.—Application for a compulsory purchase order in respect of a site of nearly 12 acres at Portland-grove is being made by the LCC, so far as may be necessary, in order that it may be redeveloped by a combined scheme of new dwellings and rehabilitation which will provide some 488 dwellings. About 220 families will be displaced. The estimated cost of acquisition, clearing and partial redevelopment is £171,100.

London, EC.—OFFICES.—Tenders are expected shortly for an eight-storey block of offices, with basement garage, which is to be built at 8-16, Great New-street, EC4, for the Harding Street Properties Investment Trust. The building, which will have a floor area of 90,000 sq. ft., is estimated to cost some £300,000 and will be part of a much larger development known as the Fetter-lane development scheme. The site is owned by the Goldsmiths Company. The architect is R. Seifert, FRIBA, 28, Great Ormond-street, WC1.

Ruislip—Northwood.—SCHOOL EXTENSIONS.—Middlesex Education Com. proposes to build of £9,805, and to provide additional accommodation as an extension to the first floor of Northwood sec. mod. sch. at estimated cost of £9,805, and to provide additional accommodation at Whiteheath prim. sch. by building an instalment of the proposed future permanent school comprising a hall and a scullery/servery at an estimated cost of £10,950.

St. Marylebone.—OFFICES.—A block of offices to be known as Maxwell House, 242-246, Marylebone-rd., is to be erected at the partly bombed site bounded by Marylebone-rd., Harewood-avenue, Lisson-grove and Harewood-row, for Argent Properties Investment Co. The eight-storey Marylebone-rd. frontage of the r.c. framed building will be faced with Empire stone and will provide 200,000 sq. ft. of floor space at an estimated cost of some £750,000. A large basement garage is to be provided. Architect: R. Seifert, FRIBA, 28, Great Ormond-st., WC. Quantity Surveyors: Thompson & Alexander, 6, Cromwell-place, SW7. Tenders are due next month.

Stepney. — FLATS, MAISONETTES AND GARAGES.—LCC has approved a scheme for development of the 1¼ acre site of the former St. Peter's Hospital, Vallance-rd., by one nine-storey and one four-storey blocks containing 50 maisonettes and two flats. Central heating and hot water will be supplied by an oil-fired system and the taller block will be served by two lifts. Four garages, 27 tenants' stores and a children's playground are also included in the scheme which is estimated to cost £171,000. The architects are Stillman & Eastwick-Field, A/ARIBA, 30, John-street, Bedford-row, WC1.

Willesden.—SCHOOL CANTEEN.—Middlesex Education Com. proposes erection of a two-storey building at a detached site at Harvist-rd., with kitchen, cloak-rooms and sanitary facilities on the ground floor and a dining hall, designed for alternative use as three classrooms and a servery on the upper floor for Kensal Rise prim. sch. The estimated cost is £29,805.

(PROVINCIAL)

Abbots Bromley, Staffs.—Governors of School of St. Mary and St. Anne propose erection of new assembly hall, £45,000 est.

Accrington.—TC approved plans for new outside market, £70,000 est.

Ashton-under-Lyne.—BC approved layout for 182 houses at Lords Fields. Approved plans: Additional office accommodation at Arnfield Works, Martin-st., for J. & E. Arnfield, Ltd.

Bakewell.—UDC proposes erection of 7 bungalows at Burton Closes estate and two blocks of 4 flats at Hall Gate site, Bradwell.

Barrowford. — Smith & Nephew (Textiles), Ltd., propose erection of new factory at Colne-rd.

Barrow-in-Furness.—TC approved plans for Phase 2 of rebuilding public baths. A: Wadham & Parker (L), 111, Duke-st.

Barrow-in-Furness. — Manchester Regional Hospital Board proposes erection of new pathology laboratory at North Lonsdale hospital.

Berwick.—TC approved amended plans by E. M. Lawson (A), Barras-bldgs., Barras Bridge, Newcastle upon Tyne, for public house at Bonar Stead, Tweedmouth, for Berwick Breweries, Ltd.

Birkenhead.—Cammell Laird & Co., Ltd., propose erection of new dry dock. Constg. engrs., Rendel, Palmer & Tritton, London.

Bolton.—BC proposes three-storey block of flats at Charles-st., and three-storey block at Dean-st.—Approved plans: 12 houses off Ashworth-la., for A. S. Woods, 42, Sherborne-rd.; 10 houses at Heaton-ave. for G. H. Pearse & Son, Ltd.

Brandon, Co. Durham.—UDC approved outline proposals for new church and schoolroom at Grove-rd. for Browney Colliery Independent Methodist Church.

Bury.—EC to prepare detailed plans for new combined gram. tech. sch. at site between Radcliffe-rd. and Openshaw Fold-rd., £295,000 est.

Chapel-en-le-Frith.—Derbyshire EC to prepare revised plans for proposed Hope Valley sec. sch.

Cheshire.—CC proposes following: Completion of Marple Clinic Centre, £10,800 est.; Stage 1 of Congleton Clinic Centre, £5,000 est. (total expenditure £22,200 est.); Stage 1 of Bebington ambulance depot, £13,300 est.

Cheshire.—EC proposes expenditure of £225,000 a year for next four years on minor capital building works.

Chester.—T. C. R. Eaton (A), 16, Whitefriars, Chester, is A for 22 houses at Saughall for RDC.

Chesterfield.—RDC to acquire site at Wolley Moor for erection of houses and bungalows.

Chorley.—Lancs EC received approval for inclusion of Chorley St. Augustines RC sch. for boys in 1956/57 programme, £100,000 est.

Congleton.—TC approved outline plan for new automatic telephone exchange and garage at rear of West-st. and Silk-st.

Coventry.—TC proposes adaptations at Brooklands Hostel to provide additional accommodation for Technical College, £10,000 est.

Darlington.—RDC to build 8 houses. A: R. Brown (A), 123, Victoria-rd., Darlington. Corporation Development Com. has granted application by J. Dawson Fawcett, Ltd., Houghton-rd., to extend their factory.

Durham.—RDC Housing A, Byland Lodge, Durham, has prepared plans for 30 houses at Sacriston-la., Witton Gilbert, 80 houses at North Bowburn, 12 at West Rainton, and 12 at Kelloe, Coxhoe.

Esher.—Surrey Planning Com. approved UDC's plans for development of Littleheath Farm estate, Oxshott, by 88 houses, 12 flats, 18 bungalows, common-room with two single-bedroomed flats and 34 garages. E&S.

Gillingham.—TC to purchase bombed site at corner of Windmill-la. and Rock-ave. for erection of block of flats.

Harrogate.—New CofE sec. sch. to replace existing St. Peter's sec. sch. for girls is planned for erection at Belford-rd. at site of old Harrogate infirmary. £100,000 est. Rev. Canon R. H. Baines is chairman of governors.

Keighley.—TC proposes erection of 90 unity flats at Braithwaite.

Keighley.—West Riding CC propose erection of new fire station at Church-st. area of Bradford-rd.

Kettering.—Oxford Regional Hospital Board proposes extensive developments at General Hospital. A: Gollins, Melvin, Ward & Ptnrs. (A/F/A), 15, Manchester-sq., W1.

Lancashire.—CC proposes erection of two infants' and jun. schs. and RC secondary sch. at Langley estate, Middleton; new sec. sch. at Hollin estate and special day school at Chadderton.

Lancs.—CC proposes new kitchens and dining-rooms at Ashton-in-Makerfield Rectory CofE sch., Whiston county sec. sch. and Stretford Gorse Park county sch.—EC received

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Ministry approval for inclusion of following schemes in 1957/8/9 programmes:—Phase 2 of Nelson College of Further Education; Horwich College of Further Education; Phase 2 of Widnes College of Further Education; Phase 2 of Rossendale College of Further Education; erection of Kirkby College of Further Education and Phase 3 of Lancaster and Morecambe College of Further Education.

Liverpool.—British Transport Docks Division to spend £275,000 on improvements at Garston docks, on the Mersey. Work will include lengthening South-East quay to 1,000 feet and replacement of existing timber gates at North dock by electrically operated steel gates.

Lytham St. Annes.—BC approved plans of 16 bungalows at Clive-ave. and Chatham-ave. for Crawshaw Bros., Ltd., and 26 houses and eight bungalows off Highbury-rd. East, for J. Halstead, Ltd.

Manchester.—Loan sanction granted to Welfare Services Com. for £38,186 for erection of old people's home, Hardy-la., Chorlton-cum-Hardy, and to Housing Com. for £29,000 for conversion of 60 dwellings at Victoria-sq., Oldham-rd., into 60 bed-sitting room flats.

Manchester.—David Brown Machine Tools, Ltd., Britannia Works, Sherbourne-st., Strangeways, propose extensions to machine tool works, after demolition of existing properties, at 1-29, Bury New-rd., Strangeways.—TC approved plans:—New St. Catherine's RC church at School-la., Didsbury, for Rev. C. A. Withers. A: A. F. Farebrother (A), 99, Seymour-grove, Manchester.—Extension to factory at Altrincham-rd., Northenden, for John Crampton & Co., Ltd. A: Harry S. Fairhurst & Son (F/A), 55, Brown-st.—Erection of new office block, after demolition of exisitng property, at 59-61, Mosley-st., Manchester, for Woolwich Equitable Building Socy. Ltd., A. Harry S. Fairhurst & Son (F/A).

Manchester.—Regional Hospital Board approved plans: New boiler house and plant at Christie Hospital, Withington, £69,281 est.; new pathology and public health laboratory at Preston Royal Infirmary, £71,912 est.; new operating theatre unit at Victoria hospital, Blackpool, £39,287 est.; new casualty department at Chorley and District hospital, Chorley, £22,900 est.—Tragem Press, Ltd., propose alterations and extensions to printing works, shop and offices at 432, Ashton Old-rd., Openshaw.—R. Hartley, 368, Flixton-rd., Urmston, is A for 37 houses at Kingsley-rd., Morrell-rd., and Larkin-ave., Northenden, for J. Maunders, Ltd.—New servicing bays, office and store to petrol filling station proposed at Princess-st., Bombay-st. and Samuel Ogden-st., for Shell-Mex & B.P., Ltd. A: Cruickshank & Seward (F), 196, Deansgate.

Manchester.—Rebuilding of Presbytery at Lower Ormond-st., Chorlton-on-Medlock, for Rev. B. McClernon. A: A. F. Farebrother (A), 99, Seymour-grove, Manchester.

Mansfield.—Meadow Foundry Co., Ltd., propose extensions to premises at Littleworth.—BC approved plans: Shop and office block at Regent-st., for Ashmead Properties, Ltd.; new stand at Field Mill, Quarry-la., for Mansfield Town Football Club.

Matlock.—UDC approved plans for 31 houses and 6 bungalows off Chesterfield-rd., for Walter Lea, Ltd.

Middlesbrough.—MofE has agreed to request of Ed. C. to include in next year's programme new buildings at Middlesbrough high sch.—New sch. for spastic children is proposed. Est. cost £10,000. Secretary, Sir Edward Anderson, 1, Grange-rd., Middlesbrough.

Mildenhall, Suffolk.—RDC to build six bungalows at site adjoining "The Elms," High-st.

Morecambe.—Plans submitted to BC: 20 houses, 8 bungalows and 34 garages at Stanhope-ave. and Homfray-grove for A. Robinson & Sons, Ltd., Westfield Works, West End-rd.

Newcastle upon Tyne.—Corporation Libraries Committee seeks site at Heaton for public library.

Newcastle upon Tyne.—CWS Architects' Dept., 90, Westmorland-rd., Newcastle, prepared plans for new drawing offices in Westmorland-rd.—Plans approved for Stage 3 of new college in Northumberland-rd. for EC. City A. EC obtaining tenders for erection of 12 prefabricated classrooms at Carlton-hse., Jesmond-rd., and conversion of old Rutherford grammar sch., Bath-la., into branch college for further education.

Northampton.—New three-storey building in contemporary style to be erected at north side of Derngate to house several depts. of head post office, part of two-year expansion scheme. Est. to cost £100,000.

Northampton.—RDC proposes erection of 16 aged persons' bungalows at Hardingstone.

Northumberland.—EC has planned new sch. at Belford. County A, County Hall, Newcastle upon Tyne.

Nottingham.—Cecil Howitt & Ptnrs. (F), St. Andrew's-hse., Mansfield-rd., are A for new licensed premises at Clifton-la., Clifton.

Nottingham.—New science block at Nottingham University. A: Basil Spence, ARA, & Ptnrs. (F), 48, Queen Anne-st., W1.

Nottingham.—Plans approved for 24 bungalows at Beeston for Trustees of Abel Collins Almshouses, to rehouse occupants of present Friar-la. almshouses which it is proposed to demolish.

Oldbury.—TC proposes erection of new munipal buildings at site between Wolverhampton-rd., Pound-rd. and Brand Hall-rd., Langley.

Oswestry.—TC to invite private A to prepare plans for further houses.

Otley.—Leeds Regional Hospital Board proposes erection of two-storey building for pharmaceutical and pathological department at Otley General Hospital.

Penrith.—RDC is seeking compulsory purchase order for proposed housing site at Penruddock. S: J. A. Sedgwick.

Preston.—EC proposes improvements at Harris Technical College, £500,000 est.—Manchester Regional Hospital Board proposes erection of new pathology and public health laboratory at Preston Royal Infirmary.

Rotherham.—TC approved plans for new church at Kimberworth Park estate. A: J. Mansell Jenkinson & Son (F/A), 18, Norfolk-row, Sheffield.

St. Faith's and Aylsham.—RDC to build 12 bungalows for old people at Yaxley's-la.

Sale, Ches.—Metropolitan-Vickers Electrical Co. to build hostel for 200 apprentices at Tyntesfield.

Seaham.—UDC received Ministry approval to erect 100 flats at Station-rd. and Denehouse-rd. £99,995 est. S: A. M. Smith.

Seaham.—UDC has received Ministry approval for building of 100 one-bedroomed houses to cost £99,995.

South Shields.—EC is seeking permission to carry out the third and final stage of New Marine Technical College. A: Meade Taylor & Wilson (A), 17, Sheffield-terr., Campden Hill, W8.—EC has received loan sanction for £156,814 for erection of school at Biddick Hall, £58,270 for new Cleadon Park Open Air sch.

Staveley.—UDC approved layout for 240 houses at Inkersall Green estate No. 2.

Sutton Coldfield.—Plans submitted to BC: 72 houses at Eachelhurst-rd., for Jenkins, Ltd., Vittoria-st., Birmingham; 50 houses off Eachelhurst-rd. for International Alloys, Ltd.; 4 blocks of flats and 19 garages at Four Oaks-rd., Beechcroft site, for Ashworth & Steward, Ltd.

Taunton.—TC proposes to build 25 shops at new Lyngford housing estate and plans for 16 already passed. Housing A: C. Bacon (F), RI StructE.

Trowbridge, Wilts.—T&CP Com. approved plans for new head post office at Roundstone Hotel site, Roundstone-st.

Tynemouth.—Plans for a Methodist Church at Broadway, Cullercoats, have been approved. Cost, £16,000. A: Cackett, Burns Dick & McKellar (F), 21, Ellison-pl., Newcastle.—Blackwood, Hodge, Ltd., Euclid Works, Northampton, propose to build regional depot and offices at Norham-rd., North Shields. A: R. H. Fielding (A), Aldwych-hse., Aldwych, WC2.—TC approved plans by Brittains, Ltd., for extensions at their premises, Rudyerd-st., North Shields, for large furniture show and display rooms.—Warehouse at Wallsend-rd. for J. Jobling & Co., Ltd., glass manufacturers, Sunderland. A: S. J. Couves & Ptnrs. (F), Carliol-hse., Newcastle.

Tynemouth.—TC planning to construct roads and sewers for 80 houses to be built at Murton and 15 at Chirton. Boro' S.

Tynemouth.—Stella Builders Products, Ltd., North Shields, are proposing to build factory at West Chirton, North Shields.

Walsall.—TC approved plans for new county sec. sch. at Lichfield-rd., Bloxwich, £431,752 est. A: Richard Sheppard & Ptnrs. (F), 15, Bedford-pl., WC1.

Warrington.—Laporte Industries, Ltd., propose expenditure of £2 million for new hydrogen peroxide plant at Walton Works.

Wigan.—RDC approved plans for erection of 100 bungalows at Coach House Farm estate for R. J. Barton & Sons, Ltd., Formby.

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* Denotes *accepted.*
† Denotes *provisionally accepted.*
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§ Denotes *accepted subject to modification.*
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Barnsley.—Extensions and alterations to premises, for Qualters & Smith Bros., Ltd. *Vernon Dunk, Ltd., Summer-la., Barnsley.

Bebington.—44 houses at Techey-la. estate, for TC. *Gregory Construction Co., Ltd., Worthing, Sussex, £60,512.

Bridgend, Glam.—300 ft. sheet pile wall at Maesteg, alongside river Llynfi for Wales and Mon. Industrial Estates, A; Vaughan & Richards, Newport. *Davies, Middleton & Davies, Ltd.

Brighouse.—Housing works for BC:—(a) Three houses and two bungalows at Stoney-la. estate, (b) 16 flats and (c) 10 houses at Field-la. estate. *Rowland Lumb & Co., Ltd; (a) £6,430, (b) £13,392, (c) £14,341.—(d) 16 houses and (e) 12 bungalows at Field-la. estate. *Harry Castle & Son, Ltd.: (d) £20,448, (e) £12,606 (subject to MH & LG approval).

Dewsbury.—Extensions to offices at Church-st., for West Riding Building Society, Ltd. *John Crossland, Ltd., 42 New-la., Cleckheaton.

Durham.—Supply and erection of steelwork for new Peterlee Acre Rigg mod. sch., for CC: *James W. Ellis & Co., Ltd., Great North-rd., Newcastle upon Tyne, £12,177.

Durham.—20 houses, roads and sewers at Belmont, for RDC: *Direct labour, £32,236.

Durham.—50 houses with roads and sewers at Framwellgate Moor, for RDC. Housing A. J. F. Willis, Byland Lodge, Durham: *Direct labour, £73,817.

Glasgow.—Scheme of new houses at Anniesland-rd., Anniesland Cross. A: John S. Boyd, (F), 248, West George-st., Blythswood-sq. *William S. Gordon & Co., Ltd. 104/106, Crow-rd., Partick, Glasgow, WC3.

Glasgow.—New houses and garages at junction of Clayton-rd., and Laggan-drive, and at Battlefield-drive and Fifth-ave. A: Norman Macfadzean (F), 137, West Regent-st., Glasgow. *John Lawrence (Glasgow) Ltd., Blythswood, Glasgow, WC2.

Glasgow.—New houses at Auchmannoch housing development site. *James I. Keenie & Co., Ltd., Floors-st., Houston-sq., Johnstone.

Godstone, Surrey.—New Mormon temple at 32-acre site at Newchapel, Lingfield. A: Edward O. Anderson, of Salt Lake City, Utah, USA. Supervising A: T. P. Bennett & Son (F), 43, Bloomsbury-sq., WC1. *Turk & Turk, £400,000.

Greenock.—216 houses in three- and four-storey blocks at North Mauckinhill housing development site. A: Robert L. Rankin, AMICE, AMPTI, Planning and Architectural Department, Municipal Bldgs., Wallace-sq., Greenock. QS: William Fyfe, Gerrard, & Paton, F/FSI., Brymner-st., Office Bldgs., Greenock. *Weirs Housing Corpn., Ltd., Calder-st., Whifflet, Coatbridge; *Lanarkshire Builders, Ltd., Mossend, Bellshill, Lanarks. and *Blackburn (Dumbarton), Ltd., Levenbank Contracting Works, Jamestown Alexandria, Vale of Leven, Dunbartonshire (subject to approval of Dept of Health).

Hawick.—New housing scheme for TC. Burgh A. Principal contr. *James Pennicook & Sons, Ltd., Croft-rd.

Heywood.—New RC school, for RC Diocese of Salford. *Parker & Calvert, Pine-st., Heywood.

Jarrow.—Factory at Bede trading estate for Fry's Die Castings, Ltd. *T. Clements & Sons, Selborne-gdns., Newcastle upon Tyne.

Kilmarnock.—Thirty houses at Leggett Development housing site, Dreghorn. A: J. Austin Bent (A), 15, Palmerston-pl., Westend, Edinburgh. Principal contrs. *Rubie & Sons, Ltd., 46, Clark-dr., Irvine.

Lancs.—Erection of following, for CC:—Maghull grammar tech. sch. *W. Tomkinson & Sons, Ltd., Great Newton-st., Liverpool, £181,064. Phase II of Lancaster and Morecambe College of Further Education. *Nicholson & Wright, Ltd., Willow-la., Lancaster, £148,026. Middleton Hollin Lane county sec. sch. *J. Tinline, Ltd., Parker-st., Sawmills, Bury, £140,143. Clitheroe girls' grammar sch. *Clegg Bros. (Burnley), Ltd., Stanley-st., Sawmills, Burnley, £114,638. Colne Park county sec. sch. *Mullen & Durkin, Ltd., 146 Trafalgar-st., Burnley, £106,880. Garstang county sec. sch. *Nicholson & Wright, Ltd., Willow-la., Lancaster, £99,534. Ormskirk Burscough-la. county sec.: *Richard Costain & Sons (Liverpool), Ltd., Barlows-la., Fazakerley, Liverpool, £99,880. Worsley Wharton county sch. *Geo. H. Peacre & Son, Ltd., Darley-st., Bolton, £44,222. Extensions at Leigh Technical College. *Geo. Moss & Sons, Ltd., Pennington Sawmills, Leigh, £27,227. Kirkby Millbrook county sch. *Morrison & Sons, Ltd., Grange-terr., Liverpool 15, £89,313. Adaptations at Quarry Green county sch., Kirkby. *Unit Construction Co., Ltd., Speke Boulevard, Liverpool, £23,526. Adaptations at Kirkby Rushey Hey county sch. *W. A. Gale, Ltd., 151 Linacre-la., Bootle, £67,550.

Leeds.—Erection of St. Kenins RC sec. sch., for RC Diocese. *Walter G. Birch (Harrogate), Ltd., Montpelier-hse., Harrogate.

Liverpool.—New RC church at Old Roan, Liverpool. *Norwest Construction Co., Ltd., Ruthven-rd., Liverpool 21. Extensions to factory, Hanson-rd., Aintree, for Hughes Bros. (Manufacturers), Ltd. *R. Costain & Sons (Liverpool), Ltd., Barlows-la., Fazackerley, Liverpool. Extensions to ship repair works at Luton-st. and Townsend-st., for C. & H. Crichton, Ltd. *Tysons Contractors, Ltd., 3 Dryden-st., Liverpool.

Liverpool.—New factory at Kirkby industrial estate for A. C. Delco electrical accessory manufacturers for General Motors Corporation, of America. A: Sir Alfred Shennan & Ptnrs. (F), 17, North John-st., Liverpool, 2, QS: G. D. Walford & Ptnrs. *Lloyd & Cross, Ltd., Port Causeway, Brombrough, Ches. £780,000.

¶London (Admiralty).—Particulars of contracts over £1,000 in value:—

Pembrokeshire: hard tennis courts, En-Tout-Cas Co., Ltd., Syston, nr. Leicester. *Fifeshire:* floor tiling, *J. R. & A. Adam, Ltd., 35, North-st., Lochgelly. *Lancs:* waterproofing roofs, *W. Winstanley & Co., Ltd., Park-place, Warrington. *Ayrshire:* building work, *Adam Smith & Son, Whang-hse., Beith, Ayrshire. *Stirlingshire:* road construction, *Forth Construction Co., (Grangemouth), Ltd., Station-rd., Grangemouth. *Carmarthenshire:* resurfacing roads, *C. J. Elliott & Co., Ltd., 339, Badminton-rd., Winterbourne, Bristol. *Pembrokeshire:* painting work, *Norman Oldham, Ltd., 43, Brunswick-st., Cardiff, Glam; building work; *Turriff Construction Corporation, Ltd., Budbrook-rd., Warwick. *Devon:* building work, *Godolphin Co., Ltd., 14, Chapel-st., Devonport. *Hants:* building work, Frank J. Privett Ltd., Privett-hse, Copnor-st., Portsmouth.

¶London (Air Ministry).—New works contracts to value £500 or over for week ended June 9:—*Building work*: *G. Reid & Son, Ltd., Catrine, Ayrshire; *R. Corben & Son, Ltd., 5, Castle-st., Dover, Kent; *G. C. Munton, Westcliffe-rd., Ruskington, Lincs; *Bosworth & Wakeford, Ltd., New-st., Daventry, Northants; *J. A. Davison & Son (Builders), Ltd., West Malling, Kent; *A. Monk & Co., Ltd., Padgate, Warrington, Lancs; *William Sindall, Ltd., Gloucester-st., Cambridge. *Alterations to buildings*: *F. R. Hipperson & Son, Ltd., Invictaho., Wantz-rd., Dagenham, Essex. *Artificers' work*: *Holborow Constructions, Ltd., Lovela., Cirencester, Glouces. *Asphalting*: *The Rock Asphalt Co., Ltd., 7/9, The Broadway, W6. *Painting*: F. Lablett & Sons, Ltd., 88, Willoughby-st., Nottingham (3 contracts); *T. E. Cundy & Son, Ltd., 48, Belgrave-rd., 90, Abbey Park-rd., Leicester. *Resurfacing*: *George Wimpey & Co., Ltd., Asphalt and Tarmacadam Surfacing Dept., Hammersmith-gr., W6.

London (British Railways).—Contracts placed by Southern Region:—*Canterbury West, extension of warehouse*: constructional steelwork, *T. W. Palmer (Merton Abbey), Ltd., SW19; building work, * Corben & Son, Ltd., Maidstone, Kent. *Redhill*: New staff accommodation, *Field & Cox, Ltd., Brighton. *Worthing*: Resurfacing of platforms, *W. H. Gaze & Sons, Ltd., SW15. *Woking District*: Resurfacing and surface dressing of footpaths and platforms at various stations, *W. H. Gaze & Sons, Ltd., SW15. *Woodside station*: Renovations, *Painting & Maintenance Contractors, Ltd., SW1. *Southampton Central*: New staff accommodation, *Brazier & Son, Ltd., Southampton. *Eastbourne station*: Renewal of roof, *G. Bainbridge & Son, Ltd., Eastbourne. *Whitstable harbour*: Strengthening of south quay wall, *R. Robinson & Co. (Contractors), Ltd., SW1. *Newhaven harbour*: Road works, *A. C. W. Hobman & Co., Ltd., EC4. *Broadstairs station*: Renovations, *R. J. Barwick, Ltd., Dover, Kent. *Appledore bridge*: Reconstruction, *L. Fairclough, Ltd., NW5.

¶London (MOW).—Contracts placed for week ending June 2:—

Aberdeenshire: Post Office, Cattofield-gdns., adaptations to form new parcels sorting office, *James Aitken, 829 Great Northern-rd., Aberdeen. *Bedfordshire:* College of Aeronautics, Cranfield, external painting, etc., *Dicol Decorators, 5 Petty France, SW1. *Cardiganshire:* Llandyssul, erection and completion of UAX telephone exchange, *D. G. Lewis & Son, 34 Priory - st., Carmarthen. *Glamorganshire:* RNAD "F" and "S" Sites A. Brackla, Bridgend, redecoration and painting works, *P. Gayland & Son, Ltd., Court-rd., Bridgend. *Midlothian:* War Dept., Edinburgh Castle, adaptations to accommodation, *R. Dixon, 15 West Barnton terr., Edinburgh. *Worcestershire:* ATE Bromsgrove, extensions, *J. & A. Brazier, Ltd., Bromsgrove, Worcester. *Yorkshire:* Govt. Buildings, Springbank, Hull, provision of new boiler house fuel store, *J. Mather & Son, Ltd., Leads-rd., Stoneferry, Hull; Crown House, Ferensway, internal painting, *Mawe, Staff & Co., Ltd., 139 Willerby-rd., Hull.

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¶London (Metropolitan Police).—Ext. painting and part int. redec. at Walthamstow P. stn.: *Geo. Butters & Sons, £694; ext. painting and part. int. redec. at 6-8, The Drive, Walthamstow: *Geo. Butters & Sons, £893.

London (War Dept.).—Works contracts placed in week ended June 2:—

Cheshire: Painting and Decorating, *N. S. Long, Ltd., Shrewsbury. *Co. Down:* Building work, *Baird Bros., Belfast. *Durham:* Roadwork, *Modern Paviors, Ltd., Shipley. *Hampshire:* Miscellaneous, *E. J. Logan (Putney), Ltd., London; *C. F. Wade & Co. (IW), Ltd., St. Helens (IOW). *London:* Re-sheeting of huts, *Adlon Erectors, Ltd., London *Oxfordshire:* Civil Engineering, *Simcock & Usher, Ltd., Northampton. *Staffordshire:* Electrical installation, *Williams Bros. (Electrical), Ltd., Wolverhampton. *Yorkshire:* Miscellaneous, *Lee-Micklethwaite, Ltd., York.

Manchester.—New depot at Leestone-rd., Northenden, for James Walker & Co., Ltd. *Benjamin Smith, Ltd., 60 Cossack-st., Hulme, Manchester. 12-storey office block at St. Peter's Square, for Legal and General Assurance Socy., Ltd. *H. Fairweather & Co., Ltd., Hyde Works, St. James-la., N10.

Middlesbrough.—New offices and garage with floor area of 10,000 sq. ft. at Lytton-st., for Middlesbrough Co-op. Society, Ltd. Plans by CWS Architect's Dept., 90 Westmorland-rd., Newcastle upon Tyne: *Jones & Son, Colville-st., Middlesbrough.

Queensferry.—New sec. mod. sch., for Flints EC. *Salem Engineering Co., Ltd., Coleshill-st., Holywell, Flints, £150,245.

Rotherham.—30 dwelling at Thrybergh, for RDC. *West Riding Building Contractors, Ltd., Thurcroft, nr. Rotherham, £37,220. 28 dwellings at Brampton Bierlow. *Bramall & Ogden, Wath-on-Dearne, £37,894.

Scottish Special Housing Assn., Ltd.—Contracts placed March 21 to April 17:—

House Erection.—Dunollie Park, Oban, 150 Blackburn, *D. Mackay & Sons, Albany-st., Oban, handrails; Larkfield, Greenock, 6 shops (trad.), 6 houses (trad.), *Barnet & Morton, Ltd., 196, High-st., Kirkcaldy, fencing; Kirkhall, Ardrossan, 40 trad., *Arch. Gibson, Ltd., 68, Ardrossan-rd., Saltcoats, brick, etc.; *N. J. Gow & Son, 70, New-st., Stevenston, joiner; *City Glass Co., 130, Denmark-st., Glasgow, N2, glazier; *D. Hutchison & Sons, 25, New-st., Irvine, tiler and roughcast; *A. D. Mitchell & Sons, Ltd., Tannage Brae, Kirriemuir, plumber; *Wm. Shaw & Co., 160, High-st., Irvine, plaster; *Browne & McMaster, 2, West-rd., Irvine, painter; *Hartley Electromotives, Ltd., Octopus Works, Monkmoor, Shrewsbury, electric. Branchton, Greenock, 152 Blackburn, *T. P. Marwick & Co., Sighthill Industrial Estate, Edinburgh 11, handrails. Cunninghar, Tillicoultry, 50 trad., *Scottish Gas Board, Bank-st., Alloa, gas services. Whiskeyhall, Annbank, 30 trad., *Wm. Loudon & Sons, Cleland, Motherwell, joiner; *A. D. Mitchell & Sons, Ltd., Tannage Brae, Kirriemuir, plumber; *Wm. Shaw & Co., 160, High-st., Irvine, plaster; *McGifford & Logan, Ltd., 128, Hope-st., Glasgow, C2, tiler and roughcast; *City Glass Co., Ltd., 130, Denmark-st., Glasgow, glazier; *James Murphy, 36, George-st., Ayr, painter; *Hartley Electromotives, Ltd., Monkmoor, Shrewsbury, electric.—Legget Farm, Dreghorn, 30 trad., *Rubie & Sons, 46, Clark-dr., Irvine, brick, etc.; *Chas. Wark & Son, Ltd., 92, East-rd., Irvine, joiner; *City Glass Co., Ltd., 130, Denmark-st., Glasgow, glazier; *D. Hutchison & Sons, 25-27, New-st., Irvine, tiler and roughcast; *A. D. Mitchell & Sons, Ltd., Tannage Brae, Kirriemuir, plumber; *Wm. Shaw and Co., 160, High-st., Irvine, plaster; *Campbell & Martin, 45-47, West-rd., Irvine, painter; *Hartley Electromotives, Ltd., Monkmoor, Shrewsbury, electric.

—Whiskeyhall, Annbank, 30 trad., *John Glendinning, 20-30, Wallace-st., Ayr, brick, etc.—Glenrigh, Inverness-shire, 7 Swedish timber, *W. C. Simpson & Son, Ltd., Inverlochy, Fort William, part of painter work.

Work Undertaken by SSHA Direct Labour Organisation.—Servicing work: High Valleyfield, Fife, 20 Blackburn, 18 Weir, first stage; Aberdour-rd., Dunfermline, 383—type still to be agreed (270 for TC and 113 for Assn.), first stage; Weir-av., Barrhead, first stage.

House Erection.—Toryglen, Glasgow (7th Dev.), 128 N/F flats, screen wall.

Maintenance.—Painter work: Dalneigh, Inverness, 56 Dunedin, *J. Grant & Son, Ltd., 852, Argyle-st., Glasgow, CW.—Northfield, Aberdeen, 126 Weir, *W. Smith, 4b, St. Swithin-st., Aberdeen.—Shortlees, Kilmarnock, 50 Orlit, *R. Torrance & Son, 20-22, Polwarth-st., Galston.—Danderhall, Midlothian, 60 trad., *M. & W. Kirk, 162, High-st., Musselburgh.—Poltonhall, Midlothian, 150 Weir, *T. W. Scott, 62, Castle-st., Edinburgh.—Braehead, Linlithgow, 60 Miller, *J. Grant & Son, Ltd., 852, Argyle-st., Glasgow, C3.—Greystonelea, Shotts, 30 Myton, *J. McLaren, 13-17, Muir-st., Hamilton.—Pinkie Braes, Musselburgh, 84 Wimpey, *M. & W. Kirk, 162, High-st., Musselburgh.—Winchburgh, West Lothian, 46 Miller, *Bathgate Co-op. Society, Ltd., 44, Jarvey-st., Bathgate.—Baillieston, Lanarkshire, 32 Myton, *J. McAteer, 49, Gairbraid-terr., Bargeddie.—Netherthird, Cumnock, 64 Weir N/F, *Alex. Pollock, 68, Elizabeth-cres., Cumnock.—Cairnhill, New Cumnock, 52 Atholl, *W. Mackay & Sons, 151, Glaisnock-st., Cumnock.—Newbattle, Midlothian, 169 N/F Cotts., W. Kilbride-rd., Dalry, 10 trad., and Kelloholm, Kirkconnel, 20 trad., *SSHA, Ltd., D.L.O.— Kelloholm, Kirkconnel, 52 Atholl, *J. Grant & Son, Ltd., 852, Argyle-st., Glasgow, C3.—Kelloholm, Kirkconnel, 140 Cruden, *Alex. Pollock, 68, Elizabeth-cres., Cumnock.—Paris-av., Denny, 20 Swedish timber, *R. McLean, 11, Milngavie-rd., Strathlane.—Watling-st., Motherwell, 40 timber, *J. Barrie & Co., 100, Windmillhill-st., Motherwell.—Laighstonehall, Hamilton, 58 Atholl, *A. McCracken, 36, Brandon-st., Hamilton.—St. Leonards, Dunfermline, 150 trad., *Neil Nicholson & Co., 12, Whytehouse-av., Kirkcaldy.—S. Queensferry, West Lothian, 30 Miller, *T. P. Dick, 71, Inverleith-row, Edinburgh.—Cuikenburn, Penicuik, 40 Cruden, *A. D. Lamb & Son, 18, Springwell-pl., Edinburgh 11.—Cuikenburn, Penicuik, 60, Cruden, *A. D. Lamb & Son, 18, Springwell-pl., Edinburgh 11.—Gorebridge, Midlothian, 30 Cruden, *Seton Constr. Co., Ltd., 6, Viewforth, Port Seton.—Gorebridge, Midlothian, 20 trad., *Seton Constr. Co., Ltd., 6, Viewforth, Port Seton.—Dolicies, Galashiels, 30 Cruden, *J. G. Lindsay & Son, Lawyers Brae, Galashiels.—Ariston, Midlothian, 26 trad., *Seton Constr. Co., Ltd., 6, Viewforth, Port Seton.—Loganlea, Addiewell, 18 trad., *J. Loughridge, 7, Mid-st., Bathgate.—Sighthill, Edinburgh, one Weir Paragon, *T. W. Scott, 62, Castle-st., Edinburgh.—Dolphin-rd., Currie, 78 Cruden, *T. W. Scott, 62, Castle-st., Edinburgh.

South Shields.—Supply and erection of steelwork for Cleadon Park county sec. sch. (additions), for EC. *R. Frazer & Son, Hebburn-on-Tyne.

South Shields.—88 bungalows at Whiteleas, for TC. Boro' S. *Whittal (Builders), Ltd., 95 Pilgrim-st., Newcastle, £112,133.

Stratford-on-Avon.—Eight houses and eight flats at Park Piece, Kineton, for RDC: *Duggins & Co., Ltd., Leamington Spa, £24,963 (subject to Ministry approval).

Thornaby-on-Tees.—Erection of new premises for Old Thornaby Social Club. A: J. C. Backhouse, 8 Broughton Rise, Malton, Yorks.: *J. & T. Parker, Ltd., St. Oswald's-hse., Commercial-rd., Sunderland.

Tynemouth.—New Methodist Church at Mast-la., North Shields. A: Cackett, Burns Dick & MacKellar (F), 21 Ellison-pl., Newcastle. *A. Anderson (Contrs.), Ltd., Stanmore-rd., Newcastle, £47,000.

Worsley.—22 houses and one shop at Little Hulton, for UDC. *G. & J. Seddon, Ltd., Little Hulton, nr. Bolton, £34,155.

York City C.—88 houses, Chapelfields estate. City A: E. Firth (F), AMTPI, 8 St. Leonards-pl.: *F. Shepherd & Son, Ltd., Blue Bridge-la., York, £107,889.

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